No. 29,598

devastation effects would make it traditional nuclear version of the

U.S. Delaying SALT

President Ford agreed in 1974 to lution to what would seem to be

treaty, Mr. Brezhnev delivered and the documents that are being

negotiate a new strategic arms the most complex problems -

modernization program that Mr. Carter ordered would produce

shells for either a neutron or a

Because of the complexities of

such weapons, it would be a year

or more from the start of such a

program before a decision would

(Continued on Page 2, Col. 5)

prepared now are largely agreed

upon and thrashed out. If the fi-

nal conclusion of this work is,

nevertheless, being delayed, this

The text of Mr. Brezhnev's

speech was issued only hours af-

ter news of Mr. Carter's decision (Continued on Page 2, Col. 5)

is evidently for political reasons."

weapon, sources said.

French President Valery Giscard d'Estaing (left) and West German Chancellor Helmut Schmidt (right) listen to Danish

Premier Anker Joergensen during opening ceremonies of the Copenhagen European Economic Community summitteence.

At Copenhagen Summit Talks

EEC Leaders Set Community Vote Date

COPENHAGEN, April 7-Euleaders agreed today that the first of this year, were postponed bedirect elections to the European cause of legislative delays in Britain and other EEC countries.

Decline of this year, were postponed because of legislative delays in Britain and other EEC countries. next year, British Foreign Secretary David Owen announced.

summit conference aimed at sta- world protectionism. bilizing their currencies and pro-

ropean Economic Community have been held in May and June ence in Bonn which President

The date — June 7 to 10 — was months to discuss economic probdecided as the leaders began a lems and the growing dangers of

moting greater economic growth. Bremen early in July shortly be-fore the world economic confer-

Decline of Dollar

eign ministers, were seeking solutions to problems posed by the decline of the dollar, growing un-The leaders will meet again in employment in the Common

1st Major Duel in Southern Lebanon

Palestinians Said to Fire on UN Unit

tinians firing on United Nations occupation." troops sparked an hour duel in acekeeding for and UN sources said.

They said that Palestinian artillery fired on UN positions near the town of Kaukaba. The UN troops responded with light and medium machine-gun fire, guer-rilla sources said. There were no

reports of casualties. The UN force entered Lebanon following the Israeli invasion

two weeks ago. There was no immediate indication as to what had prompted the Palestinian fire. But diplomats in Beirut speculated that it may have come from radical Palestinian factions who believe that the UN force is not insuring Isra-

el s withdrawal. PLO Criticism

The Palestine Liberation Organization said here, "We consider the Israeli announcement on withdrawal a trick and part of the U.S.-Israeli conspiracy in this country. We believe that Israel

speculated that this may have

Reporter Loses Suit In U.S. Wiretapping

WASHINGTON, April 7 (NYT)—A Federal District Court judge yesterday dismissed a civil suit that Hedrick Smith, Washington bureau chief of The New York Times, had brought against former President Richard Nixon and several former government

officials Judge John Smith jr. said that they had had a "good-faith basis" for a wiretap that was placed on Mr. Smith's home telephone in 1969. He added that it had been maintained within the Justice Department's guidelines for national security surveillances. Mr. Smith, who was diplomatic correspondent for The Times when the tap was placed, had asked the court to rule that the surveillance rael will begin a two-stage partial was illegal.

BEIRUT, April 7 (UPI)—Pales has no excuse for prolonging its fueled Palestinian resentment. occupation."

The Palestinians argue that the UN presence should be limited to southeastern Lebanon today, the tioned in the Kaukaba area. Dip- Israeli outposts to prepare for economic meeting in Bonn]," he first major fighting involving the lomats noted that there were no Israel's withdrawal from Leba- said.

> The Norwegians established a new roadblock and fortified a road near Kaukaba yesterday. A Norwegian soldier was slightly wounded in apparent mortar crossfire between the Palestinians and Israeli positions further south.

The flare-up occurred as UN officials arrived in Beirut for talks on logistical and administrative details of the UN presence.

The UN officers, under instructions from Mai. Gen. Emmanuel Erskine, commander of the UN peace-keeping force, "contacted several persons in an effort to stop the south Lebanon clashes," UN sources said. They said that Gen. Erskine would proceed to the Kaukaba area to help restore peace.

Israel to Begin Withdrawal TEL AVIV, April 7 (AP)—Is-(Continued on Page 2, Col. 4)

1st Action by Interim Government

Rhodesia to Release Political Detainees

SALISBURY, Rhodesia, April 7 (UPI)—Several hundred black political detainees, incarcerated without trial by Prime Minister Ian Smith's former government. are to be released as part of Rhodesia's "internal" majority

rule agreement. The move — the first concrete step taken since the agreement was signed March 3 - was announced yesterday by the executive council of the pre-majority rule interim government. The council is composed of Mr. Smith and three Rhodesia-based black leaders, one of whom, the Rev. Ndabaningi Sithole, was himself

a detainee in the 1960s. A statement said that 24 detainees already have been released. Though initially restricted in their movements, "all restrictions upon them will be withdrawn," it said. Orders authorizing the release of several hundred more detainees will be signed and processed next week, the statement said.

Confrontation Expected

The announcement preceded an expected confrontation of the interim government with Britain and the United States over the U.S.-British call for a new Rhodesia conference of all interested parties, including the militant ing figures that "the release of a released.

guerrilla-backed Patriotic Front. An U.S.-British diplomatic is envisaged. Authoritative reteam was expected here soon possibly tonight or tomorrow. John Graham, deputy under secretary at the British Foreign Office, and Stephen Low, the U.S. ambassador to Zambia, have been assigned to persuade the interim government to take part in the proposed conference later this

The government has said that it will consider "constructive ideas" but that the internal settlement cannot be renegotiated.

It has said that Washington and London, instead of pushing their own majority rule plan, should persuade the Patriotic Front to join the internal agreement. But the Front calls the settlement a "sellout."

Conditions on Release

The announcement on the detainees said that "many of them are now prepared to support a cease-fire and work within the principles of the [internal] agree-ment," and that "release will be phased and will be subject to essential security safeguards." Those freed must promise not to take part in subversive activities,

substantial number of detainees' ports have put the number of persons in detention at about 1,000. Josiah Chinamano, leader of the Patriotic Front-affiliated African National Council-Zimbabwe, said that, to his knowl-

were among the 254 detainees recently freed. Meanwhile, James Chikerema. vice-president of one of the black organizations taking part in the internal settlement, said that members of Mr. Chinamano's group recently tried to beat a section leader of his own United Af-

edge, no members of his party

rican National Council. And he warned: "The [black] overnment that will emerge after Dec. 31 [when a full power transfer is to take place] will not tolerare that kind of fooling around. It will deal with them. Those will be African politics and African politics are tough."

Angry Reaction

SALISBURY, April 7 (AP)-Conservative white Rhodesians reacted angrily today to the announcement on the release of the political prisoners. And some blacks were asking why all politi-The statement said without cit- cal detainees are not to be

all growth rate.

The conference was the first of three gatherings in coming ment, accompanied by their formonts to discuss economic prob
The heads of state and governbly in France, to promote Euroment, accompanied by their forpean unity; the fixing of a date
ment accompanied by their fornext summer for the first communitywide elections and the issuing of a declaration on the democrat-

> summit meeting and we hope for positive results," Danish Foreign Minister Knud Andersen said. "The situation in the world is

that we have thorough negotiations at the summit and that we lay the basis for further negotiations this summer [at the world

With 6 million unemployed throughout the Common Market and the situation getting worse, unemployment ranks high among the priorities as the Community leaders assembled in one of a regular series of thrice-yearly meet-

The leaders were scheduled to discuss a broad range of economic, monetary and international issues, including trade with Japan, relations with the developing countries, energy, the growing tendency towards protectionism and the means of stimulating economic growth.

Market and the community's failure to achieve a respectable over-

ic principles of the community.

"This will be the best prepared

of Europe.

No Soviet Production

weapons of their own. The Soviet Union had vigorously denounced the anticipated U.S. production of such weapons and had organized demonstrations in protest.

Mrs. Benigno Aquino, wife of the jailed opposition leader, votes in suburban Quezon City.

Test of Strength for Marcos Regime

Turnout Heavy in Philippines Elections

MANILA, April 7 (UPI)-Fili- at between 80 to 90 per cent of where Mr. Marcos's wife, Imelda,

Political interest was centered

Awaits Soviet 'Restrain the production of neutron war- saw pact forces might launch Europe for almost 20 years. The heads has therefore become a "bargaining chip" in U.S. negoti-

Reserves Option

Carter Puts Off Neutron,

against Western Europe.

But opponents of the system

argue that its reduced blast and

more tempting for commanders

to use, thereby lowering the

The now-deferred neutron ar-

tillery shells were designed to re-

place aging 8-inch and 155-mm.

shells that have been deployed in

one of his sharpest criticisms over

the failure of the two super-

powers to reach a new SALT

have passed since that time and

the agreement has not yet been

signed," Mr. Brezhnev said, "The

sides are capable of finding a so-

'Almost three and a half years

"threshold" of nuclear war,

tegic arms limitation. Neutron weapons kill primarily by radiation and generate less blast and heat than current nuclear weapons. They would, in the opinion of NATO strategists, be most effective against a massed

Arms Limitation Talks and said

that President Carter was stalling

on a new arms agreement for

Navy ship in the Pacific off Vla-

divostok, where he and former

Speaking from the deck of a

political reasons."

ations with the Russians on stra-

Mr. Carter, in a statement announcing his long-awaited decitank attack that Soviet or Warsion, said that "the ultimate decision" on whether to produce such enhanced radiation weapons Brezhnev: will be made later" and "will be influenced" by Soviet "restraint in its conventional and nuclear MOSCOW, April 7 (UPI)—Soviet President Leonid Brezhnev arms programs and force deployments affecting the security of the today accused the United States United States and Western of using the neutron bomb as a Europe. bargaining chip in the Strategic

The President said that he had ordered the Defense Department to proceed with the modernization of nuclear warheads for the Lance missile and 8-inch artillery but was "leaving open the option of installing the enhanced radiation elements."

WASHINGTON, April 7 (IHT)—President Carter an-nounced today that he will defer

production of neutron weapons

and await signs of Soviet "restraint" in their construction

and deployment of nuclear and

conventional arms and forces.

NATO Consulted

Mr. Carter said that the United States was consulting its NATO partners on his decision to put off. but not cancel - production But first, the meeting dealt with of the neutron weapons, adding purely Community matters—the setting up of a foundation, probation to discuss with them approximately in the control of the neutron weapons, adding that his administration "will continue to discuss with them approximately in the control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons, adding that his administration will control of the neutron weapons are not of the neutron weapons. priate arms control measures to be pursued with the Soviet

Mr. Carter said that the United States "will continue to move ahead with our allies to modernize and strengthen our military capabilities, both conventional and nuclear." He added: "We are determined to do whatever is so serious that it is imperative necessary to assure our collective security and the forward defense

By inviting Soviet "restraint" in its military build-up, Mr. Carter clearly signaled Moscow that he was waiting for action that would make it unnecessary to order neutron warheads into production.

Previous public statements calling on the Russians to offer an inducement to halt U.S. neutron production were answered only with announcements that they would not build neutron

Mr. Carter's decision to defer

William Whitelaw, who announced Conservatives' plan for limiting immigration into Britain.

In Conservative Party Proposals

Tough U.K. Race Curbs Urged husbands and frances of Com- Organizations U.K., said that the LONDON, April 7 (Reuters)monwealth women.

Britain's opposition Conservative party today announced tough proposals for curbing colored immigration.

Deputy Party Leader William Whitelaw outlined plans for an overall quota limiting immigration and a ban on immigration by

headed the administration ticket

ment candidates.
Police officials described the

polls, killing four and wounding virtually uncontested for govern-

His party also plans a register of dependents in the Indian subcontinent who wish to join heads

of households here, tougher re-strictions on their entry and fewer work permits for foreigners. Race has become a hot political

issue in Britain and the proposals are likely to provoke protests and political clashes. The Labor government yester-day said it would make no radical

changes in immigration regula-tions. The parties rival policies face a crucial test in an April 20 by-election in the inner London area of Brixton, which has a large black population.

Harsher Than Expected

The Conservative proposals, which contain eight policy changes, are harsher than expect-

Mr. Whitelaw told a Conservative conference in Leicester that they would be implemented by his party if it wins the next gener-al election, which must take place within 18 months; and is widely expected to be held this fall.

The heated political argument about race started when Conservative leader Margaret Thatcher said that many Britons feared they might be swamped by the

colored population.
Yesterday Home Secretary
Merlyn Rees demed that this could happen and said that colored immigration last year was 28,000—a drop of 25 per cent from 1976.

Britain's colored community numbers 1.9 million, about 3.5 per cent of the population, and is mainly composed of Indians, Pakistania, Asians from east Africa, blacks from the Caribbean, and their descendants.

Called Gross Affront

The Conservative proposals were immediately attacked by immigrant leaders. One of them said Early this evening, the only major report of violence came from Zamboanga Dei Sur province, 500 miles south of Manila, where suspected Moslem rebels ambushed a B.F. Goodrich Co. truck carrying company workers to the strength, leaving the other areas with the manila region, where opposition forces mustered their carrying company workers to the strength, leaving the other areas with the manila region, where oppositions are sufficient to the strength of the str they were a gross affront to the Indian people. Jagmohan Joshi, national secre-

tary of the Indian Workers Association, said: "They are devised to cause psychological disturbances, emotional upsets and the permanent division of families."

Kanti Nagdi, secretary general of the Confederation of Indian

group to carry identity cards. The Indian community will be very, very angry over this package," he

Portugal Says Food Rationing Possible in '79

LISBON, April 7 (AP)-Portugal will be forced to ration food next year if it does not start to produce more, Trade Minister Basilio Horta warned today.

Announcing big increases in the prices of subsidized food items, Mr. Horta said that the government could not go on paying for imports at the present rate. "Supplies will run out next year if we do not become more

productive," he said.

Prices of a "shopping basket" of essential items were raised between 10 and 38 per cent from last year, the minister said. He said that the package would be expanded to include chicken, eggs and other items produced locally.

But imported mean expecially But imported meat, especially beef, no longer will be subsidized, he said. The public would be encouraged to eat pork, which was in surplus last year.

The price increases follow rises of up to 50 per cent in transport, gas and electricity charges. Tax revenue is to be increased by about a third in a drive to halt the slide in the country's ailing econo-

Metalworkers End West German Strike

STUTTGART, April 7 (AP)-Striking metalworkers in the state of Baden-Wuerttemberg approved a compromise contract settlement yesterday, ending their three-week strike, a union spokes-

A spokesman for the union said that about 93,000 workers had voted in favor of the contract, which includes a 5 per cent raise.

pinos turned out in large numbers the 22 million registered voters.

Officials estimated the turnout in the populous Manila region

today to vote in the the country's first martial-law national elec-

tions, which have been seen as a

test of strength for the regime of President Ferdinand Marcos

seats in the Interim National

Assembly, considered as the fore-

runner of a regular parliament. Results are expected tomorrow.

The voting was for 165 elective

proposed register of dependents would mean immigrants registering themselves.
"It is like requiring one racial

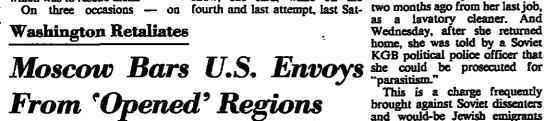
Muscovite to Try Again to Flee

MOSCOW, April 7 (AP)-A Russian woman seeking to rejoin her defector husband in Sweden declared today that she would keep striving to leave the Soviet Union despite the failure of an

airplane escape attempt. Describing the abortive scheme, Ludmila Agapova told Western correspondents that "only the groundless cruelty of the Soviet authorities forced us to

take this step."
Soviet officials had repeatedly denied appeals by Mrs. Agapova, 39, to be reunited with her husband, Valentin, a Soviet merchant sailor who defected to Swe-

Mrs. Agapova told how she, her teen-age daughter and elderly mother-in-law spent several cold, wet winter nights in an open shelter near a lake about 25 kilometers from the Soviet-Finnish border while awaiting the plane which was to rescue them. On three occasions -



By Dan Fisher

MOSCOW, April 7-The Soviet Foreign Ministry is refusing nied by an explanation saying permission to U.S. diplomats who try to visit newly "opened" areas here, and Washington has begun to reciprocate by turning down Russians who wish to travel in the United States, it has been

Specific areas in the Soviet Union were declared "opened" on Jan. 9 under what was billed as the first major liberalization of Soviet travel rules in more than 10 years. But the travel war continues and shows no signs of let-

ting up.
The Soviet refusals seem directed specifically at U.S. diplomats. A U.S. and a British diplomat were turned down when they filed to travel together to Magni-togorsk in February. But another British diplomat was told that he could go. And two British defense attaches are said to have visited a

newly opened city near Lenin-French diplomats were permitted to travel to Magnitogorsk, U.S. and other Western journalists were allowed to visit a city from which a U.S. diplomat was

Baltic states.
But U.S. Embassy personnel have so far been unable to visit ty, according to embassy sources..

it a newly opened city:

The reasons behind the Soviet travel refusals are unclear. Officially, the Foreign Ministry usually cites "reasons of a temporary nature" in vetoing the travel plans. But it may be that the U.S. Embassy has been more aggressive than other Western embassies in testing the new travel

Seven trips involving 10 supposedly open cities have been rethat at least 14 Americans have rested and that one was shot by

been affected so far.
A similar number of Soviet diplomats in the United States

13 Companies **Tokyo Tremor**

TOKYO, April 7 (AP)—A medium-size earthquake shook Tokyo and its neighboring regions today. There were no reports of casualties or major dam-

WHERE THE WORLD MEETS



GRAND HOTEL ZURICH

Golf, tennis, swimming. Living in the Grand Style. KURKAUSSTRASSE 65. 8032 ZURKOL

TELEPHONE: 01 32 62 31. TELEX: 53449 GRAND CH. RACUL T. DE GENDRE.

P.O.P. is a sure way to better health,

BODY FITNESS AND BETTER HEALTH

WITH PORTUGUESE OYSTER POWDER

Feel young again with P.O.P.

ABSOLUTELY NATURAL DIETETIC PRODUCT, UNEQUALLED IN CONCENTRATION OF MOST NATURAL ELEMENTS REQUIRED BY THE HUMAN BODY FOR FITNESS. Immediately assimilated and surpringly efficient, Developed by well-known Biologist, Medical Doctor L. MARCERON.

Battle of 150 pills, U.S. \$23 including registered parcel past, il air-post preferred, then add \$2. In France in Pharmacie. Health Food Shaps, etc., if not available, write to:

LABORATOIRES I.T.C., 117 Avenue Emile-Zola, 75015 PARIS, France.



Ludmila Agapova

March 11, March 12 and March 19 — the escape plane failed to show, she said, while on the

may also have been affected. Eve-

ry refusal of a Soviet travel notice

in the United States is accompa-

that it is in response to a specific case here. "We believe in recipro-

The timing of the new Soviet

travel rules was believed tied to

the opening of the final round of

the review conference on Europe-

an security in Belgrade. Freer

movement of foreigners was one

of the provisions in the 1975 Hel-

sinki Pact, the application of

is outdated because both coun-

© Los Angeles Times

city," an embassy source said.

Until 1975, Mrs. Agapova worked as a mechanical engineer specializing in acoustical insula-tion for machinery. She was fired two months ago from her last job, fourth and last attempt, last Sat-

> This is a charge frequently brought against Soviet dissenters and would-be Jewish emigrants after they have lost their jobs.

urday, the aircraft arrived about 1½ hours before the trio had

reached the lake rendezvous spot.

The plane's pilot, Karl-Goran

Wickenberg, and another Swede

were arrested by Finnish police

after they returned from the un-authorized flight into Soviet terri-

The airplane, a Piper Cub, was

to have touched down on the ice

covering the lake, located near

the town of Priozersk, about 140

But Mrs. Agapova said that

even if the timing had been cor-

rect on the final try, executing the

escape probably would have been

impossible because warmer

weather had by then melted the

ice along the shore of the lake.

kilometers north of Leningrad.

Mrs. Agapova said that a key factor in the decision to attempt the airborne escape was a Soviet official's remark during an interview in Sweden last summer that defectors such as her husband would never see their wives and families again.

"After I learned of the interview, I realized that the only way to rejoin my lawful husband was to escape from the Soviet Union," she said.

which was under review at Bel-Previously, Mrs. Agapova had tried sending appeals to the unit-The system of restricting travel ed nations, going on hunger strikes and taking other steps in the Soviet Union and the United States is a security precaution all to no avail.

that many U.S. diplomats believe She expressed the hope that Finnish authorities would not tries now have networks of spy deal harshly with the Swedes arrested in connection with the

Turnout Reported Heavy In Philippines Election

(Continued From Page 1) elections as generally peaceful

soon afterward was barred and a British and a U.S. correspondent traveling alone were allowed to ilies were usually neavy.

There were scattered complaints, mostly in the Manila area, from both administration any of the opened areas outside and opposition groups. The two of the immediate Moscow vicini- camps accused each other of using "goons" to terrorize their fol-

Opposition leader accused the government of harassment and stuffing ballot boxes in the Philippines' first election in five years.

Mrs. Cory Aquino, wife of the imprisoned opposition leader, charged that a top coordinator of the People's Power coalition party was arrested in suburban Makati by a police squad led by the town's mayor.

Mrs. Aquino accused police of jected by Soviet authorities since warning their followers against the new rules went into effect. casting their ballots for the oppo-Embassy travel rules require dip-sition. One opposition candidate lomats to travel in pairs, meaning said 12 of her supporters were ar-

To Quit India

NEW DELHI, April 7 (AP)— Finance Minister H.M. Patel told Parliament today that 13 foreign companies so far have declined to reduce their share of ownership in local subsidiaries and have decided to leave India.

Mr. Patel said firms expressing their inability to comply with India's foreign exchange regula-tions act included IBM World Trade Corp., Coca Cola Export Corp., Eli Lilly and Co. and Con-solidated Pneumatic Tools, all U.S. firms; A. Johnson and Co., Baker Perkins and International Limited, and Columbia Gramaphone Co., of Britain, and Bunge

and Co. Limited of Argentina.

The nationality of the remaining five companies — Ingra, Kendall Farms Private Limited, Torrance and Sons Limited, Van Rees India, and Weddel Limited -was not listed.

the police last night, but a police spokesman denied this.

Stuffed Early

The People's Power headquarters said that the coalition's poll watchers reported election workers stuffed ballot boxes even before the polls opened in many precincts throughout the city.

Mr. Aquino, under military detention since the proclamation of martial law in September, 1972, was sentenced to death last year for murder and subversion, but he was allowed to run while his case is under review.

The opposition called for a "noise barrage" among Manila residents last night to sound off their protest against the government and thousands responded by marching through city streets, banging on tin cans and drums and honking their car horns for more than two hours.

A ride through several parts of the inner city and the suburbs showed a widespread turnout for last nights demonstration.

There was no report of significant violence, and although a po-lice officer said that he had orders to arrest anybody joining the demonstration, it was unlikely that many were arrested because of the sheer numbers involved.

63 Prisoners To Leave Chile

SANTIAGO, April 7 (WP)— Sixty-three persons serving prison terms for politically-motivated offenses will begin leaving Chile for exile next week, the Justice Ministry announced yesterday, the Los Angeles Times reported.

They will be the first beneficiaries under what amounts to a general amnesty for political of-fenders announced Wednesday by President Augusto Pinochet.

The total number of prisoners affected could eventually exceed 500, according to diplomats and Catholic Church officials.

disarmament and through acts of mutual restraint as between NATO and the Warsaw pact. "The allies therefore expressed

At the same time, they stressed the need to "modernize NATO's military capabilities, both conventional and nuclear," Mr. Luns

BRUSSELS, April 7 (UPI)— underlined the importance of contributing to European and world defer production of the neutron security through arms control and

NOT QUITE RIGHT-This locomotive which appears to

be doing a balancing act near Bell Haven, N.Y., is a real show stopper — the whole show from Buffalo to Bingham-

ton. It got that way when the four freight cars it was pulling were derailed, wrenching it violently off the tracks.

Allies See Neutron Move

Forcing Soviet Restraint

NATO Assesses U.S. Decision

weapon should convince the War-

saw pact to show restraint in its

arms programs and force deploy-ments, NATO Secretary-General

Joseph Luns said today.

Ambassadors of the 15 NATO

nations were informed of Mr.

Carter's decision at a private

meeting While expressing "un-derstanding for the U.S. decision", the allies said that any

further action would depend on

the restraint shown by the Soviet

Mr. Luns said that the ambas-

sadors "reiterated their concern

about the increasing offensive ca-

pabilities of Soviet conventional

forces and with the continued ex-

'Need to Modernize'

"They therefore stressed the need to modernize NATO's mili-

tary capabilities, both conventi-onal and nuclear. In this connec-

tion, the allies noted that the

United States intended to proceed

with the modernization of the

Lance [missile] system and of the

8-inch gun, leaving open the in-

stalling of enhanced-radiation

First Clash

In Lebanon

(Continued From Page 1)

withdrawal of its troops from

southern Lebanon on Tuesday,

affecting troops along the eastern

half of the front, a UN spokes-

Plans for the the phased with-

drawal, which would be complet-

ed by Friday, were presented to

the chief of UN operations in the

Middle East by Lt. Gen. Morde-

chai Gur, Israeli's chief of staff,

The first stage of the pullout

will affect an area east of Marjay-

oun, a Christian-held town three

miles north of the Israeli border,

the UN spokesman said. The Is-

raeli troops also will withdraw

from the Khardali bridge over the

Begin Rejects Total Pullout

JERUSALEM, April 7 (UPI)—Prime Minister Mena-chem Begin said yesterday that

Israel will not stand for total

withdrawal to the pre-1967 bor-

ders in a peace settlement.

Litani River, he added.

during a meeting in Jerusalem

"At the same time, the allies

[neutron] elements.

man said.

vesterday.

fensive Soviet nuclear forces.

nsion and improvement of of-

understanding for the U.S. decision to defer production of enhanced-radiation weapons. The allies agreed that further action would be influenced by the degree to which the Soviet Union showed restraint in its arms programs and force deployments

which affect NATO security.

They agreed that the alliance

will continue to consult on the subject and to discuss appropriate arms control and disarmament measures to be pursued with the Soviet Union," he said.

(Continued From Page 1)

have to be made about the kind

No Trade-off Proposal

No specific proposal on arms trade-offs will be made to the So-

viet Union, sources said, and no

time limit was put on the neutron

But they said that a continued

upgrading of Soviet or Warsaw

Pact forces on the NATO front or

a refusal by the Russians to enter

into any proposed negotiations

could trigger the order to build

real option," an administration

sion seems to meet the demands

mut Schmidt, who, beginning last

of West German Chancellor Hel- field.

"The option to go ahead is a

of shell it would be.

deferral.

neutron shells.

official said.

Concern Expressed Yesterday, Panama's ambassa-dors to the United States, the United Nations and the Organi-

Raises Doubts on Key Amendment

Canal treaty approved last month The move raises new uncertainty about the fate of the Panama Canal treaties as their supporters in the Senate have become increasingly confident of winning

ond treaty now being debated. It was already clear that Panama disliked the disputed "De-Concini reservation" to the first treaty. That reservation, introduced by Sen. Dennis DeConcini, D-Ariz. spells out a U.S. right to intervene in Panama to keep the canal operating at any time after the year 2000, when Panama would assume full control over

By Robert G. Kaiser

(WP)—The government of Pana-

ma has circulated a statement to

members of the United Nations raising the possibility that it will

by the Senate.

WASHINGTON, April 7

the canal. The letter that Panama has circulated at the United Nations and, reportedly, a second letter sent by Panamanian leader, Gen. Omar Torrijos, to certain heads of state - goes beyond mere dislike and suggests that Panama may find the reservation unacceptable. If that happens, the: treaty could not be properly ratified, and the long effort to resolve: the future of the canal by negotiations could reach an impasse.

U.S. Officials Worried

The Carter administration is worried by this turn of events, officials said yesterday, but not alarmed. Several official sources said that Gen. Torrijos has not yet made his intentions clear.

Some theorized that Gen. Torrijos is trying to pressure the Senate not to make any more significant changes in the treaties. Others suggested that he might be responding to domestic opponents who have attacked the De-Concini reservation. Still others felt that he might be trying to assess international opinion toward a Panamanian rejection of the reservation.

Columnist Carl Rowan reported in Washington Wednesday night that Panama had already told the United States that it could not accept the DeConcini reservation, but administration officials denied this yesterday. Administration officials said

Awaits Signs of Soviet 'Restraint'

Carter Puts Off Production of Neutron

Problems in getting Mr.

Schmidt and his government to

guarantee their support for pro-

duction and deployment influ-

enced Mr. Carter's reversal of his

earlier plan to go ahead immedi-

Unique Weapons

shells and warheads would be, if

built, the first tactical nuclear

weapons designed to kill enemy

troops primarily through radia-

tion rather than by destroying

Because they reduce blast and

heat, proponents argue that they

towns and cities near the battle-

Production of the weapons was

their tanks and equipment.

The now-deferred neutron

ately with neutron production.

varheads on German soil

before publicly agreeing to de-ployment of neutron shells or and not expected to be made

Europe.

NATO allies.

that Panama has told them several times how much it dislikes the DeConcini reservation. Panamanian and U.S. officials have discussed ways to "put a good face on it," an official said.

challenge or even reject a key amendment to the first Panama zation of American States expressed their concern about the situation in Panama as a result of the DeConcini reservation to Sens. Alan Cranston, D-Calif., two-thirds approval for the secand Frank Church, D-Idaho, two key treaty supporters.

Demonstrations were scheduled today in Panamam City to protest the reservation. U.S. Amabssador William Jorden in Panama informed Washington that the situation there is very bad, according to a source.

Several Latin American governments are upset by the De-Concini reservation. President Carlos Perez of Venezuela told President Carter in Caracas last

Panama May Challenge Treaty week that he hoped the President could do something to mitigate the reservation's impact.

Some Latin American diplomats have suggested that some governments may refuse to ratify the treaty on the canal's neutrality, which will be open to adherence by all states, as a form of

protest against the reservation. The DeConcini reservation was accepted by President Carter, during tense negotiations, to win the two-thirds approval of the first Panama treaty in the Senate. The first treaty concerns preservation of the canal's neutrality; the second, now under consideration, spells out conditions for U.S. transfer of the canal to Panama between now and 2000.

Several liberal Democratic senators who support the treaties argued strongly against the De-Concini reservation as unwarranted and provocative. Administration officials decided they had to accept it to win over Sen. De-Concini and-several other sena-

Vance Tells House Panel

U.S. Is Assured by Turks **Over Military Operations**

BY Oswald Johnston

WASHINGTON, April 7-The Carter administration has been assured that Turkey will allow the United States to resume military and intelligence operations from about a dozen major U.S. and NATO bases closed three years ago if Congress lifts the arms em-bargo against Turkey, Secretary of State Cyrus Vance said yester-

Opening an administration campaign to convince Congress that the embargo has outlived its usefulness, Mr. Vance, accompanied by Defense Secretary Harold Brown, also told a congressional committee that he expects a serious negotiating attempt to solve the impasse between the Greek and Turkish communities on Cyprus within the next two

The embargo was imposed in early 1975 to rebuke Turkey for using U.S. weapons when it invaded Cyprus in July and August,

and not expected to be made

public until the weapons were de-

ployed with NATO forces in

Last June, the Washington

Mr. Carter, after first acknowl-

edging that he had known about

the weapons, gave his initial sup-

port to them by requesting con-

gressional approval of their pro-

duction. But he said at the time

that he would withhold final ap-

proval pending consultation with

Revelation of the proposed

West Germany. Opposition

weapons caused a political uproar

then grew in other West Europe-

an countries, fanned in part by

Soviet attacks on the new weap-

Britain Lends Support

LONDON, April 7 (AP)— Britain supports Mr. Carter's de-

cision to postpone production of

the neutron bomb, Prime Minis-

ter Callaghan's office announced.

The statement added that the So-

viet Union "should now respond

to President Carter's decision by

measures to moderate the threat

which we see from the scale of

their build-up of both nuclear

and conventional armaments."

jewelry."

Post disclosed that production of

the weapons was to begin.

1974. Attempts by the Ford administration to lift the embargo failed, in part because of pressure from Greek-American voters and politicians.

More Receptive

Mr. Vance and Mr. Brown found the House International Relations Committee yesterday considerably more receptive to their arguments than they had expected, despite the presence of Rep. Benjamin Rosenthal, D-N.Y., an architect of the original embargo, and Rep. Gus Yatron, D-Pa., a strong supporter of the

embargo.

Mr. Vance stressed that easing the embargo would make a Cypriot settlement more likely because it would remove political pressure under which successive Turkish governments have refused to negotiate.

He said that the new government of Premier Bulent Ecevit appeared strong enough and stable enough to compromise on a Cypriot settlement. He also said that a detailed proposal for a constitutional and territorial compromise is expected in about 10 days.

Mr. Brown said that the c of NATO bases and U.S. intelligence installations had seriously weakened the alliance and damaged the ability of the United States to monitor Soviet strategic

missile launch tests. Reopening Possible

Mr. Vance disclosed that the Turks have agreed to reopen the bases when the embargo is lifted. He also held out hope of the more important installations being activated immediately while a new agreement on their use is worked out.

The closed U.S. intelligence bases include Diyarbakir and Pirinclik, two radar installations in southeast Turkey, and Belbasi, a seismic detection base near Ankara that monitored underground nuclear explosions. Also considered critical are Karamursel, a ship-monitoring facility near the Turkish straits, and a similar installation at Sinop, on the south coast of the Black Sea.

Mr. Vance noted that the Cyprus negotiations, at a standstill for the last year, are due to be reopened later this month when the Turkish-Cypriot community presents its constitutional and territorial proposals to Unit-ed Nations Secretary-General Kurt Waldheim. If Mr. Waldheim agrees, talks with the Greek-Cypriot community could

C Los Angeles Times

Brezhnev Accuses U.S. Of Delaying SALT Talks

The shape of Mr. Carter's deci- cause less collateral damage to

December, sought an attempt at first approved by President Ford

an arms trade-off with the Soviets in November, 1976 — a decision

(Continued From Page 1) to delay production of the neu-

tron bomb was disclosed in Washington. Diplomats said that Mr. Brezhnev's remarks could not have reflected the Carter decision within that time and was not seen as a Soviet reply to it.

Mr. Brezhnev said: "The matter is that the U.S. government shows indecision and inconsistency and looks back at the circles which were against this agreement from the very beginning and which are doing everything they can to thwart it and free their hands for an uncontrolled nuclear missile arms race." Mr. Brezhnev said that the

United States and some of its

NATO allies showed bad faith in considering the neutron bomb. "The United States and some other NATO countries are trying to mislead the people," he said, "pretending that they are ready to hold talks with the Soviet Union on this question while they are in fact trying to make it the subject of bargaining and tying in this weapon with unrelated issues. Concealed behind all this

is only one thing: A desire to

move away from the clear-cut

and concrete Soviet proposal for

mutual refusal to manufacture

maneuvering does not testify to the seriousness of intentions to achieve disarmament nor does it facilitate advance toward this

'Must Meet Halfway' "Outstanding questions [on a

new SALT agreement] cannot be solved without the United States making steps to meet us halfway. But, frankly speaking, we do not see such steps of late. One gets the impression that some people in the United States are not averse to interpreting our readiness to conclude an agreement as a chance to secure unilateral advantages for the United States.

"We do not demand that the agreement give us any advantages at the expense of the other side but we expect the other side to take a similar approach. There can be no other solution."

U.S. School Protest Ends

AMHERST, Mass., April 7 (UPI)—About 100 University of Massachusetts students who helped seize the chancellor's office in protest of campus dormitory conditions yesterday were granted immunity from prosecution and left the administration neutron weapons. Such building

Kremlin Sees Dangerous Trend In Popularity of 'Crucifix' Jewelry

MOSCOW, April 7-"I have a cross," the middle-aged Moscow woman whispered, pulling a billfold out of her purse. Here, I'll show it to you." She glanced around to make sure that no one else could see, then extracted a tiny blue-and-silver

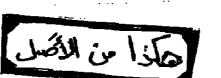
"I don't wear it so I don't give people something to gossip about," she said.

Crosses and crucifixes are officially taboo here, where the Russian Orthodox Church once reigned along with the czars, and the cross stood next to the two-headed eagle as a symbol of Russia. But crosses are not even sold in the jewelry stores today. although the few functioning churches still sell them.

Now young people have taken to wearing crosses as jewelry in what the government considers to be a dangerous fad. Science and Religion, a state magazine, said recently, "A responsible Soviet citizen would never wear the cross as a piece of

The Moscow woman is typical of what the state apparently considers a dangerous, borderline case. She describes herself as an atheist. Why does she carry the tiny cross then? "It's a tradition," she said. "I'm not a believer, but I am a real Russian. I like to go into a church now and then, too. Many people who are not believers do. They go sometimes when things aren't going well, or when their parents are sick."

D Los Angeles Times



An international call is the next best thing to being there.

9. Homesick.

(Another good reason to call home.)

Two Receivers Malfunction

U.S. Scientists Perplexed By Voyager 2's Problems

By George Alexander

PASADENA, Calif., April 7-Just as they were beginning to overcome the problems that had cropped up on Voyager 1, scientists at the Jet Propulsion Laboratory here yesterday were con-fronted with serious problems on the Voyager 2 spacecraft.

House Supports Repoliticizing of U.S. Post Office

WASHINGTON, April 7 (WP)-The House passed legislation yesterday that would return to the President and Congress some of the power over the U.S. Postal Service they relinquished seven years ago.

The bill, passed 384 to 11, would turn the postmaster general back into a presidential appointee, give Congress a veto over policy changes such as the proposed cancellation of Satur-day deliveries and remove the current ceiling of \$980 million a year on the postal subsidy. It would require the Postal Service to explain in detail to Congress each year how it plans to spend its money.

Rejected by a 218-to-180 vote was a proposal to allow Congress to veto rate changes, which would have forced members to face up

to politically unpopular increases. The Postal Service was set up seven years ago as a semi-independent agency on the theory that it would be more efficient if run first receiver aboard Voyager 2 is like a private company under its own board of governors separate from partisan politics. The House bill would abolish that independ-

Bowling Balls Burned

OLATHE, Kan., April 7 (UPI)-The fire department here discovered two burning bowling balls behind a residential garage. Officials theorized that a disgrun-tled bowler, who had sworn off the sport, had elected to burn the

By George Lardner Jr.

WASHINGTON, April 7

sulted in the release of U.S. funds

for Philadelphia's Hahnemann

According to a government study of the \$14.5 million grant,

the administration at first decid-

ed to hold up the money under

the Impoundment Control Act of

1974, but then hurriedly reversed

itself under pressure from Rep.

Daniel Flood, D-Pa. The flip-flop

came on the day before President

Ford's deferral announcement

Mr. Flood, who pushed the

Hahnemann appropriation

through Congress, and Rep. Joshua Eilberg, D-Pa., whose law firm was hired at about the same

time to secure additional financ-

ing, have come under investiga-

tion in connection with allega-

tions that they might have profit-

ed from the hospital's \$63.5

Irregularities Found

Mr. Flood's and Mr. Eilberg's ac-

counts in the House were recently

subpoeaned by a U.S. grand jury

A separate inquiry into the circumstances of the funding was

conducted in February by the

Community Service Administra-

tion, which Congress assigned to pay the Hahnemann money. A

yesterday to make possible the scheduled pullout of 6,000 U.S.

troops from South Korea this

However, the plan sponsored by subcommittee Chairman Sam-

uel Stratton, D-N.Y., would re-

quire a "basic ground combat force" of U.S. troops to remain

Grounded Tanker

NEW ORLEANS, April

(AP)-A U.S. tanker loaded with

Alaskan crude oil has freed itself

from a mud bank at the mouth of

the Mississippi River and pro-

that the 220-meter Mount Wash-

ington pumped its oil to the side

which was afloat, lifting the other side from the mud. He added that

Is Freed in U.S.

ceeded upriver.

there was no oil leak.

Subcommittee approved a plan unlikely.

House Unit Bids For Korea Plan

WASHINGTON, April 7 South Korea. Such a settlement is (WP)—A House Armed Services not in sight and is considered

in Philadelphia.

All bank records pertaining to

million construction program.

was to be sent to Capitol Hill.

Hospital.

Both Voyagers are bound for the planets Jupiter and Saturn and are due to arrive at Jupiter sometime next year.

The problems with Voyager 2 are in the probe's radio receivers. Flight controllers here noticed that one of two identical receivers aboard Voyager 2 was acting up.

They radioed a command to the unmanned probe, about 280 million miles from earth, to switch over to the second receiver. It did so and everything went smoothly for about 14 minutes.

Erratic Action

But then the second receiver began performing erratically, and controllers commanded the probe's communications system to switch back to the first receiver. "It went out on us almost immediately after the switch-over," an official said.

Because the probe is tuned to the first receiver, there is no way that controllers here can signal the dead unit to instruct it to switch again to the second receiv-

However, the Voyager's onboard computer will switch automatically from one receiver to the other if it does not log any instructions from the controllers for seven days. This automatic switch was built into the Voyager's computer in case of problems with the probe's communications sys-

permanently off the air. Receivers usually don't cause you any trouble," said the labora-tory official. "They're probably the least troublesome equipment on any spacecraft today. But here we've got problems with two."

The fact that the second receiver also has been acting erratically has given an urgency to the problem. "Everybody has been pulled off [Voyager] number one," he added, "and put to work on num-

FBI Questions Interest of Congressman

Ford Action on Hospital Funds Probed

(WP)—The FBI is investigating a ities in the course of the still un- set to spend the unsought appro-

sudden turnabout by the Ford completed project, including the priation. As a consequence, the administration in 1975 that re-

Released under the Freedom of

Information Act, the report also

New General

Col. Margaret Brewer, 47,

was nominated by Presi-

dent Carter for one-star

brigadier rank. If approved

by the Senate, the 26-year

veteran would be the first

woman general in the history of the U.S. Marines.

The Stratton plan, adopted 7 to 1, against the dissenting vote of Rep. Ronald Dellums, D-Calif.,

represents a middle course be-

tween opposing views in Washington about the immediate fu-ture of President Carter's troop-withdrawal plan. One proposal

would allow the gradual with-

drawal of troops over five years and the other would postpone ac-

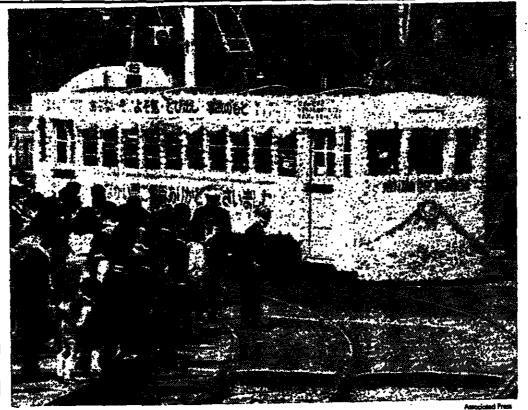
\$472,400.

nine-page report compiled by stated that the CSA, as the CSA general counsel Frank Jones government's anti-poverty agen-

singled out a number of irregular- cy, had been reluctant at the out-

1975.

spent.



THAT'S THE GOOD NEWS—A streetcar covered with flowers moves along Tokyo's last streetcar line to announce that the crews serving the trolleys will be cut by half—from two to one—as a step toward doing away with the entire decades-old system in the near future.

In Deaths of 3 Oklahoma Girls

Man Sought in U.S. Slayings Captured

Gene Leroy Hart

living with an old man who lived

lieved that Hart had been living

Charges of harboring a fugitive

would be made against the owner

of the house, Sam Pigeon jr., Mr.

Carter Promises

Farmer Aid Bill

WASHINGTON, April 7

(WP)-President Carter vesterday

told Congress that he would veto

the multibillion-dollar emergency

farm bill "should that legislation

In a letter to Sen. Edmund Muskie, D-Maine, chairman of

the Senate Budget Committee and one of the leading opponents of the farm measure, the President

age taken out of production.

Monkey Beater Beaten

LONDON, April 7 (UPI)-A

200 keeper who was fired for al-

legedly attacking a monkey with a

stick has been refused compensa-

tion for what he charged was "un-

fair dismissal." An industrial tri-

bunal did not believe that the

keeper had struck the monkey in

self-defense because it had taken

"an aggressive stance."

To Veto Costly

in the house since November.

type of check."

Wilkerson said.

the three girls.

reach my desk."

(AP)-Eight lawmen kicked down the door of a cabin in the scrubby hills of eastern Oklahoma yesterday and, after a brief scuffle, arrested Gene Leroy Hart, 34, the fugitive sought in the slayings of three Girl Scouts

at a summer camp last year.
District Attorney Sid Wise said
that Hart would be arraigned today. He was taken to the state prison here last night.

He was captured by agents of the Oklahoma State Bureau of Investigation in the isolated cabin in the Cookson Hills, ending what was believed to be the largest manhunt in Oklahoma histo-

Dick Wilkerson, bureau deputy director, said that the agency had learned that there was "someone

originated and, with the help of

an official at the White House

Office of Management and Budg-

et, arranged a deferral of the

money to take effect June 24.

Congress Has Last Word

Control Act, such intended defer-

rals must be communicated to

Congress, either chamber of

which can then overturn them

and direct that the money be

message stating that the money was being held up to determine

what legal authority' CSA had

for hospital construction activity.

port then said: "Congressman Flood's office and Flood himself

brought pressure on the White

House "to reverse itself before

the message ever got to Capitol

Another Smith

To Lead Church

INDEPENDENCE, Mo., April 7 (AP)—Wallace Smith, great-grandson of the founder of the Church of Jesus Christ of Latter-

Day Saints (Mormon), has assumed the presidency of the reorganized Church of Latter Day Saints, succeeding his 78-year-old

In taking the post, Mr. Smith became the sixth president of the

church, which was established af-

ter the assassination of Joseph

Smith jr. in 1839. nine years after

he founded the Mormon religion. Every president of the reorgan-

ized church has been a direct

male descendant of Mr. Smith.

Wallace Smith's father, W. Wal-

lace Smith, was a son of Joseph Smith 3d. The elder Smith had

been president of the reorganized

church for 20 years, succeeding his brothers, Israel Smith and

Citing an OMB official, the re-

President Ford had signed a

But under the Impoundment

sa, and Michelle Guse, 9, of Broken Arrow, were found near their tent on June 13. Investigators said that two of the girls were apparently bludgeoned to death and the other strangled. All had been sexually molested.

his September, 1973, escape from the Mayes County jail in Pryor, Okla., where he had been awaiting transfer to the state prison to begin serving a rape sentence.
Authorities linked him to the

slayings after finding two tattered photographs near the camp. Hart is believed to have printed the photos, taken at a 1968 wedding in southwestern Oklahoma, in a prison darkroom after serving as a photographer's assistant at the

by himself in a rural area and ture followed months of exhauswho cut wood and received some tive investigation. "You don't luck into anything in the Cook-The check was determined to son Hills," Mr. Wilkerson said. be a Social Security check, and "You make your own luck by Mr. Wilkerson said it was begoing out and kicking the brush."

Hart had been a fugitive since

ceremony.

Law officials said that his cap-

"The advent of the Soviet Backfire has changed the charac-

Stronger Air Defenses Urged

Brown Warns Carter on Russia

By Bernard Weinraub Harold Brown has told President able for a crisis." Carter that the deployment of a Soviet bomber "has changed the character of the possible threat" from the Soviet Union and that stronger air defenses are needed

also said that the Defense Decapable of winning a war in the Middle East, "at least through

"While Arab inventories of activity in this field [civil military equipment are expected defense]. While I do not believe than those of Israel," Mr. Brown the Israelis, and we would expect them to prevail in any war at least through 1983."

The defense secretary's memowhich was sent in the last two weeks, candidly discusses a wide range of defense and international issues, including problems with the Atlantic alliance and growing Soviet capabilities. The document, stamped secret, was obtained yesterday by The New York Times.

Worty Expressed

In the document, Mr. Brown expressed his worry about the new supersonic Soviet bomber. which has been code-named Backfire in the West, capable of reaching U.S. targets.

"Our policy in recent years has been not to invest heavily in continental air defense on grounds that it makes little sense in an era when we are defenseless against ICBMs and SLBMs," Mr. Brown said, referring to intercontinental ballistic missiles and submarinelaunched ballistic missiles.

"However, we have maintained a modest force dedicated to air defense," Mr. Brown said. "That policy has been likened to a Coast Guard of the Air' - the intention being to prevent overflight provocations and 'free rides' without really aspiring to substantially reduce U.S. casualties in an all-out attack.

ter of the possible threat," Mr. Brown added. The defense secretary indicated

that as a first step in countering that threat, he was directing that 72 F-15 fighters from the Tactical WASHINGTON, April 7 72 F-15 fighters from the Tactical (NYT)—Secretary of Defense Air Command be made avail-

Mr. Brown also urged the President to support an increase in the nation's "small and static civin the United States.

Mr. Brown, in a 10-page secret annual increase of \$50 million a memorandum to the President, year, at least until 1984, for the civil-defense budget, which now partment believed that Israel was runs at about \$100 million a year. "As you know," Mr. Brown

said, "the Soviets have shown great interest and considerable to remain considerably larger that the effort significantly enhances the prospects for Soviet wrote. "The ratio is improving for society as a whole following any the Israelis and we would expect full-scale nuclear exchange, it has obviously had an effect on international perceptions, particularly in contrast to our small and static randum to President Carter, civil defense program. For that which was sent in the last two reason alone, I believe at least modest efforts on our part could

have a high payoff." Discussing the North Atlantic Treaty Organization, Mr. Brown told the President he was tentatively undertaking "an ambitious program" to store as much combat equipment and supplies as possible in Western Europe because Warsaw Pact forces could be mobilized so quickly that the United States would not have enough time to send adequate combat supplies.

This is a serious plan, and one of the key elements in improving our contribution to the alliance," Mr. Brown said. "Consequently, I have diverted funds from the Navy and the Air Force to the Army to pay for this pre-position-

Budgetary Problems

Budgetary problems were discussed in some detail in the document, which is a summary of planning guidance given to the armed forces recently by the secretary and his staff. Mr. Brown also indicated that

he was perplexed by the Navy's problems and made it plain that it was probably up to the President to resolve some of them.

The basic problem, the defense secretary said, was that the cost of ships and planes for the Navy was rising faster than the defense budget and the Navy's share of it.

reasonably "confident of success"

with a fleet of at least 535 ships.

A fleet of 585, he said, would give

him "a substantial degree of con-

fidence that we will stay ahead of

the Russians in a maritime sense

C Los Angeles Tones

for I5 or 20 years at least."

a nuclear-powered cruiser and a medium-sized conventional car-rier — would alone cost almost \$4 billion, not much less than the entire 1979 program.
"The situation faces us with something of a dilemma," he said. "On the one hand, we could decide to do the best we can at

As an example, he said that three

ships that were being considered for the 1980 fiscal year building

program - a Trident submarine,

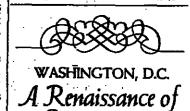
the current level of funding. The full effects would manifest themselves only a decade or more from now. On the other hand, we could fund the Navy at a higher level - perhaps \$3 billion today. If that were done within the current budget by transferring funds from the other services, I have no doubt it would jeopardize our efforts to improve our capability in the central front

the W DIAMOND for you

INTERNATIONAL DIAMOND SALES

HEAD OFFICE:
DIAMOND BOURSE
51 HOVENIERSSTRAAT
2000 ANTWERP - BELGIUM
Tel. (031) 31 93 05
Telex 35395 INDISA B-

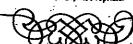
LONDON SHOWROOM: THE SAVOY HOTEL THE STRAND LONDON WC2R DBP Tel. (01) 836 4343 ALL DIAMONDS GUARANTEĘD BY CERTIFICATE



Graciousness A hixtury hotel in the great European tradition. Elegant, quiet,



15th & M Streets, NW, Washington, D.C. 20005 Telex 64245 or see your travel agent Marshall B. Coyne, Proprietor



Fears Russians Will Overtake U.S. Fleet

Hart was charged with three counts of first-degree murder on June 23, 1977, 10 days after counselors at Camp Scott near Locust Grove, Okla., found the bodies of Doris Denise Milner, 10, and Lori Lee Farmer, 8, both of Tul-

said today. The five-year shipbuilding program President Carter sent to from service. Congress last month is not adequate to maintain this country's superior strength at sea unless the program is increased substantialin future years, according to

Adm. Holloway, who retires in June, and Navy Secretary Graham Claytor jr. avoided outright opposition to the President by telling the House Armed Services subcommittee on seapower that the Navy could live with Mr. Carter's program for a

characterized the legislation as being hastily drafted in an at-"The five-year plan that has mosphere of emotion and confuwill permit this country to main-He said that measures to boost farm income that were proposed riority in maritime forces for last week by the White House about 10 years," Adm. Holloway would be sufficient to aid the ag- said. ricultural community.
The House Budget Committee

14 Ships a Year

earlier refused to recommend an Mr. Carter's program calls for increase in next year's budget to building an average of 14 ships a cover the higher costs of the farm year for the next five years. It bill, which would raise support prices for the coming season in would provide for construction of one diesel-powered aircraft carproportion to the amount of acrerier in 1980 but no nuclearpowered carrier during the five

> Defense Secretary Harold Brown recommended the 14-shipa-vear program after determining

other parts of its budget to shipbuilding. But he invited the

Navy Chief Attacks Carter Ship Curb

year or two.

been presented to the Congress tain the current thin level of supe-

could not transfer money from

By Norman Kempster tagon budget and earmark the ada fleet would be too small to ditional funds for more ships. maintain the Navy's worldwide

14-ship-a-year construction rate

was continued indefinitely, the

Navy would have only about 420

ships by the end of this century

because new construction would

be well below the rate at which

aging ships must be removed

Adm. Holloway said that if the role. He said that he would be

WASHINGTON, April 7-The United States is in danger of losing its superiority over the Soviet Navy during the 1980s at the present pace of combat ship construction, Adm. James Holloway 3d, the chief of naval operations,

Adm. Holloway.

that the Pentagon could do no more within its \$126-billion budget for fiscal 1979. Mr. Claytor said that the Navy

T 13 TAN GIUDICELLI

presents his Fall/Winter collection '78 daily in his showroom, 59 Av. d'Iena, Paris. Tel.: 502.10.10.

Boutique: 13 Rue de Tournon, Paris. Tel.: 326.84.97.

Seiko LC Digital Quartz Multi-Alarm. Easy-to-operate. Versatile. Convenient.



Seiko's new amazingly accurate Digital Quartz Multi-Alarm offers continuous readout of the hour, minute and second on a 24-hour basis. It features an automatic alarm that repeats every 24 hours without resetting. It can also be set to produce an alarm signal every hour on the hour. Or a countdown of the remaining time with an alarm signal at "zero". There's a volume control system and a battery life indicator. And it's even water-tested to 30 meters. No matter what your requirements are, the Selko LC Digital Quartz Multi-Alarm does it all. Dependably, Simply. And with superb Seiko Quartz accuracy. Seiko Quartz.

SEIKO

Someday all watches will be made this way.

PARIS-BRINDISI-PATRAS-ATHENS Train and Ship Service A Coast Guard spokesman said

until a political settlement is and the other woul achieved between North and tion for 12 months.

Saturday-Sunday, April 8-9, 1978 **

Goading Israel

For 26 years Israel has acquired arms under a formal agreement with the United States. On occasions too numerous to recite it has used those weapons outside as well as inside its own borders. Through three major wars and countless incidents, successive administrations have understood that the realities of Arab hostility justified the reading that, in using U.S. weapons in that way, Israel was acting in legitimate self-defense. Why, then, did Secretary of State Cyrus Vance feel bound to slap Israel hard on Wednesday by informing Congress that Israel "may" have violated the 1952 military-aid agreement in

its recent intervention in Lebanon? Mr. Vance offered no explanation. He merely made the charge and indicated Washington would not invoke the arms cutoff that a 1976 law requires if a "substantial violation" of a military-supply agreement is found. But that is unsatisfactory. What are the standards the State Department applies, in this case and in general? All arms recipients are entitled to know. Is it conceivable that "legitimate self-defense," the 1952 language, does not cover a country that has lost more than 1,000 lives to terrorists crossing from a neighboring state—Lebanon—that does not perform the elementary national duty of policing its own territory? A country that, even as the rebuke arrives, is withdrawing its forces under the terms of a UN resolution drafted in the first instance by the United States? We don't understand.

We support the administration's strategy of seeking a Mideast peace agreement. But some of its tactics are insensitive. Right now, for instance, the administration should be concentrating on persuading Israel to rethink parts of its position in the negotiations with Egypt.

It can only weaken the U.S. case if, while presenting it, the United States acts in other ways to embarrass Israel and nourish its swollen suspicions that its security is of fading U.S. concern. It is one thing to criticize the Lebanese operation, as we have done, for its heavy civilian toll. It is another to smear Israel with a vague allegation that puts a cloud over access to the arms on which its security depends. As a good lawyer, Mr. Vance could have found a half-dozen other ways to handle the congressional inquiries on Israel's use of U.S. arms in Lebanon. Intead, a calculated decision seems to have been made to use the issue as a gratuitous political

THE WASHINGTON POST.

Succumbing in Nigeria

agreed to turn over power to an elected had not opened the door to the guerrillas sworn to destroy him. But there was, too, some recognition that the agreement between Mr. Smith and "internal" black nationalists reflected "some progress...a step in the right direction"—as, of course, it did.

In Lagos, however, Mr. Carter seems to have succumbed to Nigeria's uncomplicated fervor for a Popular Front guerrilla victory. The final communique omitted any mention of progress in Salisbury, although a multiracial interim government actually exists there. Rather, the communique (signed for Nigeria by its unelected military leader) pronounced the internal procedure "unacceptable, as it does not guarantee a genuine transfer of power to the majority"—as though the guerof power they might expect to win in elections, will consummate "a genuine transfer of power to the majority" if they win by force

and show South Africa that peaceable to Rhodesia, too. change works passably well. Those are wor-

Frankly, we liked the administration's thy purposes. But Mr. Carter's pursuit of Rhodesia-Zimbabwe policy better before the these purposes can be painful. Virtually all President dropped in on Nigeria. A month his rhetoric favors the external people. He ago, for instance, soon after Ian Smith holds Salisbury to lofty moral and political standards, while often appearing to wink at majority-rule government later this year, the the failings of the Popular Front. He refuses administration was still complaining that he to say the one thing that might most clear the air: that if the guerrillas reject a fair oportunity to come home while Salisbury moves to honest majority rule, the United States will go with Salisbury. His performance is all the more baffling when you consider that the internal settlement looks to be more democratic, moderate and multiracial than any gov-

ernment the guerrillas might construct.

Does the United States gain respect for itself and a hearing for its policies—among internal or external Rhodesians, in Nigeria or elsewhere in Africa-by conveying an impression that it will do practically anything to win liberationist credentials? We doubt it and we think the President doubts it too. Indeed, in Lagos he conspicuously did not do the easy, popular-in-Africa thing with respect rillas, who have refused to settle for the share to South Africa, choosing instead to affirm the United States' own, less militant policy. His hosts did not like it and said so. But on their part, they withheld any real support for the American effort to limit Soviet-Cuban in-We understand that the administration tervention in Africa. Such candor-and conseeks to draw internal and external forces tinued discussion-is what good friends, estogether, the better to bring peace to Zim- pecially those trying to become better babwe, preempt Cuban-Soviet intervention friends, owe each other. It should be applied

THE WASHINGTON POST.

Other U.S. Opinion

FBI and Terrorists

Most persons in the United States will praise, rather than criticize the decision of the FBI to give agents special training to deal with terrorist hijackings or kidnappings.

FBI Director William Webster disclosed the program in his first news conference. He said Europe's terrible experience—West Germany, the Netherlands and Italy in particular—convinced the agency it ought to be prepared for the possibility this kind of activity might spill over here.

European experts have been brought to the FBI training academy in Quantico, Va., to bolster the training program. The agency also is developing sophisticated "profiles" on potential terrorists and is working close with the Army's anti-terrorist program.

Now that Webster has reassured us, his public conversation on this subject should stop. Talking about the possibility of terrorism might be the cause of it. Some "crazy" somewhere might get it into his head to challenge the new program.

—From the Detroit News.

Problem of Bhutto

Pakistan's military junta headed by Gen. Zia may think it solved a primary problem the other day when a Pakistani court found former Prime Minister Zulfikar Ali Bhutto

guilty of conspiracy to murder and sentenced him to hang. The charismatic Bhutto, still the giant on the Pakistani political scene, has been a burden to Zia since the military overthrew Bhutto's elected government last year.

But Zia should think twice before the noose is slipped around Bhutto's neck. The former prime minister did not run a firstclass democracy. There is reason to believe that he rigged the nation's last election. And he may veey well be guilty of conspiring to kill a political opponent. However, there are three serious problems with Bhutto's trial, casting doubt on the legitimacy of the ver-

First, the prosecutor's case was presented in public, but Bhutto's defense was made behind closed doors. Thus only one side of the case has been heard openly. Second, Zia himself let it be known what he thought the verdict should be before the trial. Third, the chief judge made it clear that he had no love for Bhutto

Zia's government needs respectability, both at home and abroad. The general is not likely to achieve that, given the befouled atmosphere surrounding Bhutto's trial. Zia should seriously consider some form of

clemency. Otherwise many observers will wonder if he is indulging in officially sanctioned political murder—the very crine of which Bhutto supposedly is guilty.

-From the Milwaukee Journal.

International Opinion

France Should Negotiate

Europe is now in conflict with the tougher new U.S. policy on uranium supplies which is designed to prevent the spread of nuclear weapons to countries which do not possess them. To be more precise, France is in conflict; but a decision to negotiate with the United States is one for the [European Economicl Community in which France has a its own enrichment plant, insists that a treaty veto. The Americans...have given notice that is a treaty...

they want to renegotiate parts of the treaty with the Community under which they supply enriched uranium for European power stations. They want about 30 changes in all. but especially they want the power to forbid reprocessing of nuclear fuel originating in the United States and the transfer of fuel to third countries. France, which is expanding

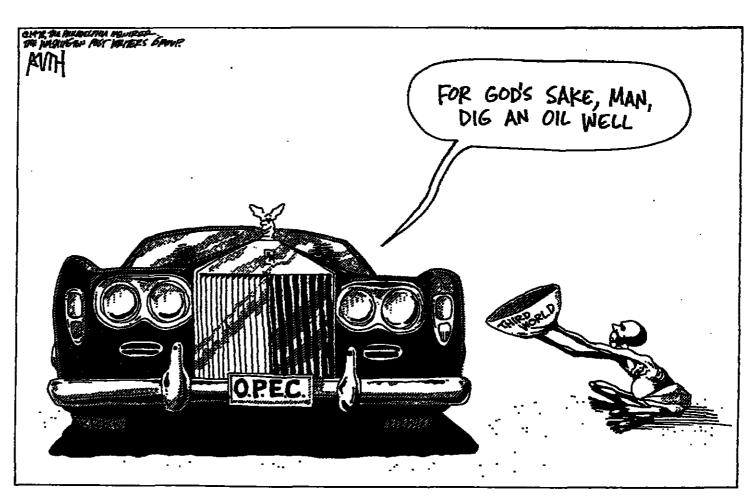
-From the Guardian (London). In the International Edition

Seventy-Five Years Ago April 8, 1903

PARIS-A glance at the Herald's front page this morning will satisfy the most rabid opponent of monarchical government that kings and emperors have an exceedingly hard-working time. The day of the "lazy king" is past. His Britannic Majesty, the Serbian king and the German Kaiser all had very busy days, whether it was regulating questions at home or abroad.

Fifty Years Ago April 8, 1928

NEW YORK-Predicting that "the world is on its way to fraternity and cannot miss its goal," Dr. S. Parkes Cadman, president of the Federal Council of Churches of Christ in America, in an address recently at the Bedford branch of the YMCA. Brooklyn, spoke of an in his social relationships and reviewed the progress in recent years towards world brotherhood.



Why Carter Hesitates on the Neutron Bomb

By James Reston

here recently for "hesitating" to order the production of neutron artillery weapons. Even some So it is possible for him to com-members of his own White House promise without banning the neustaff and Cabinet have wondered why he seems so troubled about giving the order to go ahead. Why shouldn't he be "trou-

bled" and "hesitant" when he considers where this alarming competition will end? A halfstarved world is already spending over \$350 billion a year on weaponry, and if Jimmy Carter is committed to anything-politically and philosophically-it is to try to get this arms race by the throat

So after hearing all the argu-ments for and against these handy little atomic weapons, he pauses, and temporizes, and thinks about compromising. And a good thing, too. If the Russians go ahead with every devilish new device their science and imagination can conceive—and they just about have-and we do the same to match them, and then they raise the ante to match us and so on, who will break the ring? And how will the nations ever progress toward a safer and more rational

Fuss

As I understand all the fuss over whether Carter decided against the neutron weapons and then pulled back under pressure from his colleagues and allies, it is this philosophic question that has held him up. Besides, what's the rush? A

good argument can be made on military terms for producing neutron shells—they are tank-killers that would minimize and maybe even neutralize an attack by the excessive Communist forces in Eastern Europe.

A counterargument can also be made, again on military terms, for not introducing them into the arsenal of the Western alliance on the ground that, if used against a Communist invasion, they might lead to an uncontrollable nuclear world war. But in political and philosophical terms, it is hard to argue with caution and delay.

The West Germans still have their doubts about the wisdom of deploying these weapons years from now on their soil. They want the Dutch and the Belgians to approve such deployment, though it is not clear that the neutron weapons now on the drawing boards could be used effectively with a range of less than 10 miles except from West Germa-

Vance's Trip

Also, Secretary of Cyrus State Vance is going to Moscow at the end of this month to renew the delicate negotiations for a second Strategic Arms Limitation Treaty. So why decide the issue one way or another before he gets

Carter was not confronted by an either-or decision to produce or not produce these weapons. There are many different stagesin production of neutron weapons, with or without their neutron

Protest on Israel

As one who grew up in an occu-

pied country, as one who has lived and worked, going on four years in the Middle East, and as

an American, I protest the preoc-cupation of the world community

with the fate of the state of Israel.

For too long, too many real needs, real crises, real life-or-death situations have been slight-

ed and abandoned because of the

world's preoccupation with Israel.

I protest the demands made by Is-

rael on our world's limited re-

WASHINGTON—President warheads. And many options on Carter has been criticized bow and where and when they might be deployed after they were produced years from now. promise without banning the neutron weapons or rushing ahead with them. He could keep the neutron option open without rushing into it before Vance got to Moscow or the Allies had made up their minds.

For the big question is not what is to be done about this particular weapon, but what is to be done about the whole reckless and expensive process of the world arms race. And here Carter no doubt differs with some of his

Moral Issue

For him, the ever-expanding development of weapons is not only a military and political but a moral question. He is more willing than his colleagues in the Defense Department to take risks

the Russians insist on going ahead with all their own weapons, he can always, if reluctantly, go ahead with whatever new weapons he chooses.

Also, there are some political maneuvers going on in all this. Carter has recently made a very tough speech about U.S.-Soviet relations. He made clear at Winston-Salem, N.C., last month that Moscow could have a second strategic arms treaty, but not if they continued to use their conventional weapons and their Cuhan mercenaries to change the political map of Africa.

Having done so, he also want-

for peace, even if he has to hold ed to indicate that if there were a

There is a great deal to be said

up the development of some new genuine reduction of tensions, the spons in order to demonstrate question of producing U.S. neuhis good faith and encourage the tron weapons could be discussed. Soviets to do the same. In his At the same time, he wanted the view, as I understand it, he can West Germans to know that the indicate his opposition to pro- neutron question was an Allied, ducing whatever new atomic and not solely a U.S. decision. If weapon comes along, and then, if West Germany wouldn't deploy it, there wasn't much point in Washington's producing it.

about this neutron issue on all sides, but maybe it is not quite as urgent as it seems. There is a long lead-time in producing these weapons, and it will be longer still before they are put in place, if they ever are. Meanwhile. Carter has a lot to discuss with Soviet leader Brezhnev after the Vance mission to Moscow about the larger question of the arms race and the political rivalries in the Middle East and Africa. And this also looms in Carter's mind, larger than the present dispute over this one important weapon.

China Rights Issue: Hands Off

By Robert W. Barnett

practical question: Should we what Americans call the "human rights" of the Chinese people an obstacle to normalizing diplomatic relations between the United States and the People's Republic

We should want to seek better understanding of the moral content in how and why Peking has sustained the legitimacy of its authority through means alien to shapes China's assessment of the political experience of the Western world.

The psychic and philosophical premises upon which the Chinese system operates differ from those of other countries, whether or not Marxist affluent or developing. But we should hesitate to condemn them as less moral merely because they are different from those of other societies. In fact, China could be giving clues to perception of moral necessities that we may be obliged to recognize if we begin to believe that we cannot assuage our economic and social dissatisfactions merely by perpetual opening up of new-resource frontiers, geographical and technological.

Chiang's Role

After World War II, Chiang Kai-shek was supported by friends at home and abroad in an effort to restore pride and effectiveness to a Chinese system crip-pled and demoralized by 150 years of humiliation and catastrophe. But the tragic fallacy in Chiang's leadership was that its legitimacy and moral sanction had stronger roots abroad than within his own Chinese environ-

The People's Republic of Chiла won its civil war because its authority was based upon strictly Chinese resources; its leaders

sources and on the resources of

the international agencies, re-sources that the world community

desperately needs. For peace, not

I protest our U.S. preoccupa-

tion, not to say obsession, with the survival of our client-state,

Israel. I protest the apparent domination of the U.S. govern-ment in this matter, by Israeli

pressure groups, just as I have

protested its domination by other

pressure groups in the past. This is anarchy. The U.S.-Israeli lobby

does a fine job, subverting, per-

• I protest the willful abuse by

verting democracy.

Letters

make Peking's record in handling committed to egalitarianism in the way it looked, it talks and behaves.

Visitors from many other parts of the developing world, awed by that achievement, can identify administrative mechanics, but We should not I go further. cannot imagine infusing their own people with the moral devotion upon which the Chinese system appears to be built. Harsh national necessity

"human rights." The first right is to survive. With China's population of 900 million to 950 million growing at a thundering rate of 15 million to 20 million year after year, the challenge to China's survival has been pervasive, sus-tained and profound.

China's responses, both voluntary and directed from Peking, reverse the stress in the freedonand-duty matrix upon which Western democratic traditions are built. But in Korea, Vietnam, Taiwan, Hong Kong, Japan and in China there seems to be utterly natural acceptance of the age-old Confucian tradition of subordinating individual liberty to collective obligation—for example, to the family. So here may be the clue to what—deep in the imagination of Chinese everywhere—is their moral equivalent to the individual human rights that Americans believe are sanctified by the Holy Bible, the Declaration of Independence, and the Bill of Rights in our Constitution.

From the days when China's leaders lived in Yenan caves to the establishment of national authority in Peking, through the Great Leap Forward, through the Cultural Revolution, through the arrest of the Gang of Four, and the re-emergence of the twice-humiliated first Deputy Prime Minister Teng Hsiao-ping, there has

Israel, of U.S.-gift war material, to destroy another country and to

kill and wound hundreds of inno-

cent man, women and children.

Civilization means restraint. The

Israelis, in Lebanon, have again

put themselves with the barbari-

by Israelis of their own limited re-

sources of energy and technology, resources that have in the past

and that might have in the future,

been used for humanitarian pur-

poses in their own country, in the

JAMES SLAVIN.

Middle East and in Africa.

Dhahran, Saudi Arabia.

• I protest the abuse and waste

WASHINGTON—The nation achieved total national self-relibeen a remarkable continuity of is nutting before itself a ance through mobilinesian and is putting before itself a ance through mobilization of the Chinese commitment to self-reliance and egalitarianism—China's moral accommodation to the necessity off survival. China's unshackling of its women, the "barefoot doctor," the mass participatory harnessing of China's rampant rivers, and what Norman Macrae, deputy editor of The Economist, calls China's present-day rural Keynesianism are expressions of that compul-

Normal Ties

Washington and Peking will enter into normal diplomatic relations with each other because doing so serves the self-interest of both countries. Neither should entertain expectations that it can reform the other. We must respect China's right to be different, or, doing otherwise, expose ourselves to charges of self-righteousness, demagoguery, and possi-bly even of imperial intent.

China's now-emerging personalities, procedures and political vocabulary offer promise of greater readiness by China to deal more forthrightly with other countries around the world. With respect and curiosity, Washington should hasten toward establishing normal diplomatic relations with Peking so as to ease exchanges of ideas, persons and goods from which the two countries can mutually benefit together and in their relations with other countries of the world com-

Robert W. Barnett, director of the Washington Center of the Asia Society, was Deputy Assistant Sec-retary of State for East Asian Af-fairs from 1963 through 1970. This was adapted by The New York Times from an article to appear in Worldview magazine.

New Style Communism Still Exists

By Joseph Kraft

DARIS—"Eurocommunism" was a word to conjure with when I visited Europe last year. Now, in the wake of the French elections, it is said to be a thing that never was.

In fact, Eurocommunism still exists. Only it has turned out to be far less than it was cracked up

At the root of all the confusion is an undoubted change in the Communist parties of Italy, France. Spain and Portugal In one way or another, they have all been brought up to date-repack aged, as it were, for more pros-perous, less ideological consumer

Thus the Communist Party in all four countries regularly criticizes Moscow on certain humanrights issues. Even the French party, which is perhaps most in thrail to the Soviet Union, attacked the recent Soviet decision to withdraw citizenship from the great cellist Mstislav Rostropo-vich.

The second undoubted change is willingness to work with mid-dle-class parties. The Italian Communists have carried this trend furthest in the move toward a "historic compromise" with the ruling Christian Democrats. But the parties in France, Spain and Portugal have also moved at times to work jointly with democratic

political groups,

A third change is a move toward a less dictatorial party structure. In France, cell meetings are supposedly open to the pub lic. In Spain, where the Communists are competing with a dynamic Socialist party, the party leader, Santiago Carrillo, is talking of genuine elections to party office. He at least implies jettisoning Lenin's insistence on control from the top, or "democratic centralism," much as Stalin has been cast aside as a guide on human rights.

A fourth change has been willingness to take into the party, in leadership posts, persons of nonproletarian origins. Many of the top figures in the Italian Communist party are aristocrats, among them Secretary General Enrico Berlinguer.

These changes go beyond mere cosmetics. They have an inner dynamism, and they make an indent for further changes over time. They promote evolution.

But so far the West European Communist parties have not been transformed. For one thing, they

still seek a monopoly of power. Thus the Italian party would like to enter into coalition with the Christian Democrats by the route of "historic compromise. Berlinguer and his men are full confident they can outshine, and eventually crush, the old-fashioned and ailing Christian Demo-

CTats. In marked contrast, the French Communist party spoiled the chances of a leftist victory in the recent legislative elections by advertising their support for nationalization on a grand scale and by their refusal to cooperate in defense matters with the United States and other NATO countries. This sabotage was committed because a leftist victory would have established the Socialists as the leading French party, thus compromising, perhaps fatally, the chances for an eventual Com-

munist takeover. Despite the show of openness, moreover, decisions are still taken in secret by the party bosses. It is now known that even at the height of their alliance, the French Communist leader. Georges Marchais, was denouncing the Socialist leader, Francois Mitterrand, at secret meetings of

the Politburo. Finally, the European Communist parties still work, and work hard, for the Soviet strategic interest. All of them oppose the major defense and international economic policies favored by Washington. All of them have backed Russia's allies in the Middle East and Africa-not to mention Cuba. In sum, Eurocommunism is

very much alive. But it is what it has always been: an updated version of communism pure and sim-ple. It may have a broader appeal in Western Europe, but it remains a threat to the interests and values cherished by most Americans and most Europeans. So the right poli-cy is to draw out for as long as possible the entry to power of any Communists in any West European country.

John Hay Whitney

L'diror

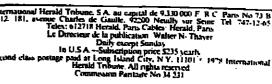
Murray M. Weiss

Co-Chairmen Katharine Graham Arthur Ochs Sulzberger

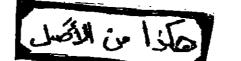
Publisher Robert R. Eckert

Managing Editor

William R. Holden









'Escapees' Stalking Animals in City

Roving Lions Are Not Pride of Nairobi

By John Damton NAIROBI, April 7 (NYT)-It began late one night in December

under a full moon. Tony Church, owner of a safari company, was driving back to his home, a 130-acre horse ranch four miles from the Nairobi National Park. He was expecting trouble because there had been an attack the night before, so he had already stabled 19 horses and lighted the hurricane lamps outside. Only the old mare refused to go in, hovering near the stable door to be close to her weaned

S. Africa Ends Terrorist Trial; 6 Are Convicted

foal inside.

PRETORIA, April 7 (AP)— One of South Africa's longest terrorism trials has ended with the acquittal of six blacks and the conviction of six others on charges of conspiring to overthrow the government.

The 12 were charged with belonging to the banned African National Congress and plotting since 1962 against the government. They were also accused of receiving military training in Mozambique and the Soviet Union, sabotaging railroads and illegally possessing arms.

They were first detained 16 months ago and went on trial early last year. But the original judge died, and the trial had to be restarted in January.

The judge said yesterday that the state had proved beyond doubt the existence of a plot against the government. But he acquitted Paulina Tsiki, 21, Lele Jacob Motaung, 44, Simon Samuel Mohlanyaneneng, 23, Martin Ramokgadi, 67, and Jacob Gaonakala Seatholo, 47.

Rhodesia Says 28 Killed in Day's Clashes

SALISBURY, Rhodesia, April 7 (UPI)—Black nationalist guerrillas attacked a hotel in southwestern Rhodesia in a flurry of incidents that claimed 28 lives in the last 24 hours, the military command said today.
The command said that insur-

gents last night attacked the Gwaii River Hotel, the hub of a farming community in southwestern Rhodesia.

The latest incidents were reported on the eve of the arrival of a British-U.S. team assigned to promote an internationally recognized peace. The team of John Graham.

deputy under secretary of the British Foreign Office, and Ste-phen Low, U.S. ambassador to Zambia, is scheduled to arrive tomorrow night.

The two envoys will try to convince the Rhodesian government to accept a British-U.S. call to stage a new Rhodesia conference, attended by all parties to the dispute, including the guerrilla-backed Patriotic Front.

Gutenberg Bible Nets \$2 Million

NEW YORK, April (Reuters)—A Gutenberg Bible, one of the world's rarest books, fetched a record auction price of \$2 million here today. The two-volume Bible was

bought at Christies auction house by New York bookseller Martin Breslauer, who said he bought it for an anonymous client.

Mr. Breslauer said: "I was determined to get it at almost any price." The previous record auction price for a printed book was short and sweet. "OK, they like short grass," he said. "People say of America." also sold at Chris-

"I got back at midnight," Mr. done that in the past. But what Church related. "I jumped into happens if we burn it and we my pickup to take a look around. den't get more rain?" There was a full moon. Deadly quiet. Then I saw them. It was an amazing sight. About 100 yards from my front door there were has been the biggest money-earnthese four magnificent lions, er in the national park system, av-

making a kill."

A Pride on the Loose

fluff up their tails."

lions has been "escaping" from wildebeest. The wildebeest looks the national park, a 44-square-strong, but they're really very mile preserve fenced in on three stupid." sides, whose main gate is only Dinesen.

were regarded as something of a compounds to guard against the der duress lark. "Girls will be girls," said an editorial in The Daily Nation in December, recalling that the Nairobi lions had engaged in horse ranch, "these lions are pranks before, including a sit-in on the Membasa road.

with darts, drugged and returned from a party." to the park but still continue to evade a high fence to hunt for food in the residential areas, and now the jesting has given way to alarm. Editorials are calling the situation a scandal.

None of the lions has attacked a human being. But they have helped themselves to six horses, a cow and a dog. They have unsettled a number of residents, who discover their German shepherds quivering to come indoors at night and wake up the next morning to find claw marks on the stable doors and lion spoor across the driveway. Some are concerned about the long-term implications of having wild animals at the doorstep, considering that Nairobi, with a population of 800,000, is growing so rapidly that it is encroaching upon Bar-oness Blixen's beloved acaciacovered hills and the beasts that inhabit them.

Conservationists, ecologists and students of animal behavior agree that the lions, which are permanent residents of the park and number about 40, have been roaming because their primary sources of food, the zebra and the wildebeest, are in short supply.

Moving With the Rains

The herbivores migrate season-ally in and out of the park through the southern opening moving across the adjoining Athi Kapiti Plains all the way to the Amboseli National Park and Tanzania. They leave the park during the rainy seasons, espe-cially the "long rains" from March to June, and return during the dry spells, when the park of-fers the only drinking water. This year, explained Samuel

Ngethe, the chief warden of the park, the rains have been so plentiful that the zebra and antelope have not been compelled to return. He conceded, too, that the park grass had grown so high that it was shunned by the grazing animals, which like their grass we should be burning and mowing to draw them back. We have

For years the Nairobi preserve

They were obviously hell-bent on eraging 140,000 paying visitors annually. One reason is that it lies Mr. Church, who had lost two on the edge of the city; another is colts to the lions the night before, the high probability of spotting telephoned the veterinary at the lions. "Wapi simba" — "Where is park headquarters. Then, rushing the lion?" — is a common back to the stable from his house, Kiswahili greeting between he noticed that the old mare was parked motorists on a busy Sungone. "She was lured into an day. Up to a dozen vehicles are ambush," he said. "It happened apt to converge on a drowsy lion, so fast. I went back to the lions waiting for it to rouse itself to and she was already half eaten. It make a kill, which is rare. was like a scene out of the game The Nairobi lions have more

preserve — these four magnifi- contact with lionizing humanscent creatures on a kill and half a or at least with cars-than their dozen hyenas running around cousins in other parts of Kenya. cackling, and you know how they They also have a stronger lazy streak and prefer easy prey. "Our lions are not like the others," Mr. Ngethe explained. "They don't go Nairobi is in the midst of a lion for strong animals like buffalo. scare. For three months a pride of They go for the hartebeest or the

This may be the only city in the five miles from the city center. world where it is possible to go to The lions have been prowling the a drive-in movie on the edge of suburbs of Langata and of the game park and hear a re-Karen. The latter is named after sounding roar from the darkness Karen Blixen, the writer who in response to gunfire on the published soaring evocations of screen. Nowadays, however, few East Africa - marauding lions who live here have seen a lion at included — under the name Isak close range, except perhaps from a car, so it was little consolation Initially the forays by the when the minister of tourism and lionesses (females do the hunting) wildlife told them to fence their

lions of Langata. "If we secure all our livestock," said Mr. Church, alluding to his going to get so damned hungry they'll feed on some drunken The predators have been shot human being staggering back

Businessman Not Seriously Hurt

Red Brigades Claim Shooting in Genoa

Moro, today took responsibility kidnappers. for the shooting of a Genoa busi-nessman in the legs and right braced for trouble today after of-

Police said that two men shot Felice Schiavetti, president of the Genoa Industrialists Association, in an ambush near his home, grabbed his attache case and fled. Doctors said that his injuries were not serious.

This is the Red Brigades," a telephone caller told the newspaper Corriere Mercantile soon afterwards. "We shot Schiavetti. A communique will follow."

In Rome, a series of bombings damaged the entrances of a police station, two Christian Democratic party offices and the headquarters of a Roman Catholic organization. And a policeman's parked zation. And a policeman's parked dividing his time between Paris car was set on fire. There were no and New York.

Ransom Demand Reported

Meanwhile, a neo-Fascist magazine said today that the terrorists are demanding \$1 billion in ransom for Mr. Moro's release.

Giorgio Pisano, political editor the rightist Italian Social Movement magazine Candido, said that he received a call from an anonymous informer saying that the Red Brigades "have begun undercover negotiations with the government to barter the life and liberty of Moro at a very high

The caller is quoted as saying that if \$1 billion is not paid at a operas to librettos by Stephen time and place to be given later, then "the Red Brigades will publish everything they have got out of Moro, who knows the whole background of 30 years of government."

works for voice and orchestra and concertos for piano and flute.

Despite this output. Mr. Nabokov was much better known for

The Red Brigades kidnapped Mr. Moro on March 16, gunning down his five bodyguards. In one communique they said that they had put Mr. Moro on "trial" to discover the wrongdoings of the ruling Christian Democrats.

Mr. Moro's wife today wrote an open letter in a Milan newspaper, telling her husband that his family is living the ordeal with him "minute by minute."

Premier Giulio Andreotti, at least publicly, has rejected any negotiations with the Red Brigades, who have indicated that they want all of their imprisoned comrades - about 160 persons released in exchange for Mr.

Mr. Moro, 61, president of the Christian Democratic party and a presidential hopeful, has beseeched his party to arrange a trade. But his letters were written

Top Aide Named by FBI

WASHINGTON, April 7 (UPI)-FBI Director William Webster yesterday announced the appointment of James Adams, 51, a career FBI man, as associate director of the agency.

Medicare to Pay \$5,600 Tab For a Sex-Change Operation

SAN DIEGO, April 7 (UPI)—Federal officials said the Medicare program will pay for a \$5,600 sex-change operation for a man who has dressed and lived as a woman for three years. The operation will be performed on Bobbie Lea Bennett, 31, who is confined to a wheel chair by a rare bone disease.

Thomas Tierney, director of the U.S. Department of Heath, Education and Welfare's Medicare bureau said a new policy extends Medicare coverage to sexual change, as long as the surgical candidates "have at least one year's experience living as a member of the opposite sex.

"From the information we have," he said, "it sounds as if Bobbie Lea Bennett would qualify for Medicare payment, and so the new policy amounts to a go-ahead for her surgery." Mr. Bennett, suffering from a disease that results in calcium-depleted bones, was married twice before he reached the age of 20. His first wife died in a car accident and his second marriage lasted only one day.

"By this time," he explained, "I knew I was really a woman." After three years of hormonal treatment and psychotherapy which Medicare paid for — Mr. Bennett said he was told March 23 the program would not pick up the tab for the operation. But that was reversed by Mr. Tierney.
Upon hearing the news, Mr. Bennett said, "All I really want is

to find Mr. Right, get married and be a housewife."

CHURCH SERVICES

FRANCE-PARIS FRANCE-PARES GEORGE'S ANGLICAN CHURCH DAYS: SUNG EUCHARIST 10:30 AMERICAN CATHEDRAL at 4 Rue de Lubeck, Pors 16e Jeno, Bossiere; bus: 63, 82]. \$29 and 11:32 am anday School 10:00 a.m. Ave. George-V. Paris-8e Tel.:359-17:90 Metro: GERMANY-FRANKFLIRT St. Marry's R.C. Parks Church & Rectory in Oberarsal An der Heide, 33 English Masses in Oberwesl. Set. 5-15 p.m. Sur. 11 c.m. English Mass in Frankfurt. Liebtrower Kirche noor I houptwachs. 1-15 p.m. Presst fr. Ernest Bock. AMERICAN CHURCH IN PARIS WORSHIP SERVICE 11 a.m.,
A Protestant Church
for all Christians
65 Quai d'Orsay (7c). (Metro: Imsaides,
Alama-Marceau. Bas 63 at door.)
Tel.: 551.38.90

EMMANUEL BAPTIST CHURCH

GREAT BRITAIN-LONDON RICAN CHURCH EN LONDON

CHURCH OF THE ASCENSIC ICON), Hely Communion, 11:30

ROME, April 7 (UPI)—The The Italian government and Red Brigades, who claim the ab-the Vatican have denied that any duction of former Premier Aldo secret talks are going on with the

foundations.

tained two days ago but at least beled them as a witchhunt.

Mr. Moro's kidnappers.
More than 100 leftists were de-

ficials banned demonstrations 50 have since been released. The that were planned to protest the arrests of leftists in the hunt for paper L'Unita had said that the arrests were "indiscriminate" and other leftist newspapers had la-

Obituaries

Nicolas Nabokov, 75, Composer

NEW YORK, April 7 (NYT)— Nicolas Nabokov, 75, a composer and writer who organized three of the largest and most influential international music festivals in the non-Communist world in the 1950s and 1960s, died early yes-terday of a heart attack following an operation.

For several yars, Mr. Nabokov

— a cousin of the late novelist,
Vladimir Nabokov — had been

As a composer, Mr. Nabokov has been known chiefly here over the last 13 years as composer of the score of "Don Quixote." a full-length ballet created by

George Balanchine for the New York City Ballet in 1965.

He composed five ballets, the earliest of which was "Ode" for Serge Diaghilev's Ballets Russes in 1928. "Union Pacific," which he himself called "the first truly American ballet," was done for Col. De Basil's Ballets Russes and was introduced in Philadelphia in 1934. The libretto for "Union Pacific" was by Archibald

MacLeish. Mr. Nabokov also composed Spender and W. H. Auden, three symphonies, some large concert

his achievements from 1951 to 1963, when he was secretary-general of the now defunct Congress for Cultural Freedom.

During this time he organized three spectacular festivals. The first, "Masterpieces of the 20th Century," was held in Paris in 1952. The second, "Music in Our Time," was presented in Rome in 1954. The third, "East-West Music Encounter," took place in Tokyo in 1961. Unknown to Mr. Nabokov

then, much of the money for Con-

gress for Cultural freedom activities came from the CIA. The rea-

Recently, Mr. Nabokov has Venice, where the composer is zines.

Mr. Nabokov was born in the Minsk region of Russia in 1903. In 1911, his family moved to St. Petersburg (now Leningrad) and, after the Revolution, he went to southern Russia, where he studied musical composition with Vladimir Rebikov. Later, he went to Germany, where he studied at the Stuttgart Conservatory and, from 1920 to 1923, at the Music Academy of Berlin.

He spent an extended period in Paris, starting in 1924 with study at the Sorbonne. It was in Paris that his professional career could be said to have begun with the Diaghilev commission of "Ode." Mr. Nabokov settled in the United States in 1933 and became an American citizen in 1939.

Mr. Nabokov wrote two books of memoirs — "Old Friends and New Music," published in 1951, and "Bagazh," published in 1975.

Stephen E. Kelly NEW YORK, April 7 (AP)—
Stephen E. Kelly, 58, long a figure in American magazine publishing, died of cancer yesterday at the means to grant amnesty to political prisoners. The Salvadoran penal code provides water and the column call prisoners the largest water than the salvadoran penal code provides and the column call prisoners the largest political prisoners. Harkness Pavilion of the Colum- cal prisoners, the lawyers said.

son for his ignorance of the true course of the money was that it was channeled through various under the Curtis Publishing Company, and was president of the Magazine Publishers Association, been making plans for a Stravin-an industry group made up of 161 sky Festival to be held in 1980 in firms that published 595 maga-

Helmut Langfelder

MARSEILLES, April 7 (AP)-Helmut Langfelder, 49, director general of the West German air-craft manufacturer Messer-schmidt Bolkow Blohm, died in a helicopter crash yesterday in this city in southern France.

He was on a test flight of a Squirrel helicopter which he was considering buying from its French manufacturer Aerospatiale. The French pilot was also killed in the crash, which officials attributed to engine failure.

Prisoner Amnesty Urged in El Salvador

SAN SALVADOR, April 7 (AP)—A group of lawyers has asked the National Assembly to grant amnesty to farmers arrested during an Easter week uprising in which 30 persons died.

A statement signed by 10 lawyers and 8 law students said that, since the uprising was political, **HEW YORK'S**

HOTEL & ARLYLE

MADISON AVENUE AT 76TH ST., NEW YORK 10021 CABLE: THECARLYLE NEWYORK TELEX: 620592

Süddeutsche Klassenlotterie

182.000 Cash Prizes! * TAX FREE * 350.000 Ticket Numbers!

3-JACKPOTS 3 x 1 Million D-Mark 22 x 250.000 D-Mark and many more!!! DRAWINGS EVERY SATURDAY!

All you need is luck - and a ticket of Süddeutsche Klassenlotterie

LOTTERIE FREUND**e**l P.O. Box 700230 D-6000 Frankfurt/M.70 West Germany

New York • Montreal

CTC Lines 1/3 Lower Regent St, London SWIY 4NN.
Tel: 01-930 5833. Telex: 917193.



An urgent appeal to Americans to help clean up this mess.

The whole world is aghast at the extent and the implications of the 220,000-ton oilspill.

And much of the world has already lent support to the clean-up action. The Germans have sent pumps and other technical equipment. So have the Dutch. Spanish fishermen have sent small boats. Money has come from as far away as Hong Kong and Indonesia. French school children and Belgians are in Brittany right now, helping to clean the beaches and to save wild life. Surely Americans are as appalled as others. They must want to help. Perhaps they don't know how.

To help Americans, French and others (indivi-duals and companies alike) who want to lend a hand, the American Chamber of Commerce in France is sponsoring and acting as a clearing house for a fund raising project entitled "Franco-American 1978 Project Brittany". This effort has the unqualified endorsement of all leading Franco-American organizations in France.

In response to our urgent request the World Wildlife Fund - U.S. and the Fondation de France have opened special accounts in Washington and Paris to receive the contributions which will be used to help

Space for this appeal donated by the International Herald Tribune.

rehabilitate the beaches, to save marine life and to save the lives of tens of thousands of birds which have been endangered as a consequence of this disaster. Contributions of every size are needed.

To qualify as a charitable contribution under U.S. income tax rules checks in U.S. dollars should be made out to the order of: "World Wildlife Fund - U.S."

All other currency checks should be made out to the order of: "Fondation de France". Contributions to the Fondation de France qualify as charitable contributions for French income tax purposes.

All checks should be mailed to: The American Chamber of Commerce in France, Franco-American 1978 Project Brittany,

21, avenue George V, 75008 Paris. This is how you can actually do something about the tragedy of the French coast! This is how you can help clean up the mess!

FRANCO-AMERICAN 1978 PROJECT BRITTANY

Photo: Paris-Match. Jean-Claude Deutsch.

Theater in London-

Ayckbourn's Universe Is a Very Small World

By John Walker

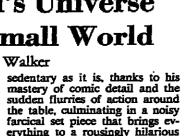
ONDON. April 7 (IHT)— sedentary as it is, thanks to his Alan Ayckbourn has desert- mastery of comic detail and the ed the comic absurdities of suburban existence for an examination of small-town rivalries in his lat- farcical set piece that brings evest and extremely funny comedy erything to a rousingly hilarious "Ten Times Table" at the Globe conclusion.

Provincial living turns out to be invest familiar characters with a suburbia with claustrophobia, a genuine humanity, showing how small, enclosed world where ev- mildly English eccentricity can, eryone knows everyone else's given the right circumstance, business and where trivial matters grow into full-blown absurdity. can become magnified into nathan a historical pageant which splits the organizing committee into two factions, right wing and left wing, determined to fight out tional issues of life-and-death importance. Not that in Ayck-bourn's universe, bleak beneath its cosy comedy, there is much difference between one state and the other. Life is death with a little oxygen added.

As usual, Ayckbourn's play is a Eddington as the ambitious but solution of a difficult technical easily brow-beaten chairman, Juproblem. He sets his action in a hotel ballroom-captured in all its dusty lack of glamour in Pa- tive with every confrontation with trick Robertson's set-at a series John Salthouse's surly Marxist of committee meetings of a group schoolteacher, Benjamin Whitrow organizing a historical pageant to as an obsessional committee man commemorate a dubious 18th- and Matyelok Gibbs as his deaf century incident in which local but sprightly mother, Christopher farmers proclaimed revolution Gibbs as a twitching dog breeder and were shot for their defiance. Gibbs as a twitching dog breeder who develops alarming paranoia,

There are moments, as lights seeing the pageant in terms of an fail and workmen hammer, when international Communist takeit seems as if the self-imposed re- over, and Diane Bull as a speechstrictions of the play are too less helper. much for Ayckbourn's invention and that he is relying on stock sit- familiar ones-such as the deaf uations to carry him through. But these moments soon pass.

When directing his own play, bourn makes them seem fre he rarely lets the action seem as his masterly sense of timing.



Ayckbourn's special talent is to

And what better circumstances

He is aided by an excellent cast. Especially notable are Paul

lia McKenzie as his bitchy wife

becoming more rabidly conserva-

the battle in earnest again?

A scene from "Ten Times Table" by Alan Ayckbourn which is on view in London.

sense of proportion. The bleakness of his vision comes in those small revelations of character that suggest people living lives of the quietest desperation—Julia McKenzie's joy, in the final uproar, when she is seized and borne off by a drunken reveler, says much of her marriage and explains her bullying manner to her husband—"When I elected you chairman," she begins one speech-and to her friends.

The Shaw Theatre, with commendable enterprise, is reviving Arnold Wesker's three plays now known as the Wesker Trilogy, which, as playwright John Witing pointed out many years ago, in-clines us to approach it "on the same emotional level as the Gos-

Even when the situations are pels. Or the Forsyte Saga." The first, his 20-year-old person who can hear something "Chicken Soup With Barley," has particularly evangelical tinge bourn makes them seem fresh by about it. What is fascinating is

not only the play itself, which

His comedy is about a loss of a stands up well despite its clumsy ense of proportion. The bleak-construction, but the difference herween it and more recent Socialist plays.

> "Chicken Soup With Barley" charts over 20 years the disinte-gration of a London East End Jewish family, symbols of a wider ideal of brotherhood and sisterhood. From an early cohesiveness-all united to stop a Fascist march through the streets in 1936—the family and their friends drift away from the Communist party and a fervent belief in imminent political change until they end up dispirited and despairing in the 1950s.

> But even so, Wesker's play is basically optimistic. It retains a belief in idealism. The last words of the play are those of Sarah, the mother who has both held the family together and pushed them apart by her fighting spirit: "If you don't care, you'll die." And earlier, Sarah, faced with

her son who has lost his faith because of what happened in Hun-

gary, says, "Socialism is my light, you can understand that? I've got to have light and love." That sort of writing is more

than a generation away from the bitterness and anger of recent leftist plays, which are filled with hate or are a scream of pain at the injustice of society.

The clumsiness of "Chicken Soup With Barley" comes from the equation of the Kahn family's problems with those of the world. The domestic story, of a strong wife trying to batter her way through to her weak husband and only forcing him into total isolation and early senility, does not always illuminate the wider social issues of the play.

It is, however, movingly acted by Barbara Young as Sarah and Martin Friend as her husbandand by Frank Baker as Ronnie, the son who fears that he may end up like his father. Anthony Cornish directs well and makes one eager to see the two other plays in the sequence.

-A Guide to the European Festivals—

PARIS, April 7 (IHT). — The following completes the listing of highlights of European music and arts festivals that has appeared in the weekend editions of the International Herald Tribune beginning with March 4-5. Subsequent festival program information will be carried in the Arts Agenda: Glyndebourne (May 28-Aug. 7): Opens this year with a new production of Mozart's "Magic

Flute," conducted by Andrew Davis, staged by John Cox and designed by David Hockney. Other new stagings are Mozart's "Cosi Fan Tutte," conducted by the festival's new musical director, Bernard Haitink, staged by Peter Hall and designed by John Bury, and Puccini's Boheme," with Bruno Bartoletti making his British opera debut as conductor and Cox as stage director, but with sets and costumes from the festival's 1967 production. Revivals of last year's stag-ing of Mozart's "Don Giovanni" and of Stravinsky's "Rake's Progress" complete the program in this small theater in a Sussex estate. (Glyndebourne Festival Opera, Glyndebourne, Lewes. Sussex BN8 5UU, England.)

Avignon (July 10-Aug. 7): The usual vast program in numerous sites in the walled city of the popes, including many new works. Theater in the main courtyard of the Palais des Papes includes Brecht's "Caucasian Chalk

DIRECTORY

the Alwin Nikolais Dance Theater. Autoine Vitez is staging a cycle of four Moliere plays and Montreal's Theatre du Rideau Vert gives three pieces in the Cloitre des Carmes. Other musi-cal theater includes works by Maurice Ohana, Lorenzo Ferraro and Monteverdi, There will be cycles of sacred music, organ music on instruments of the region, jazz, and an exhibition of 50 years of lithographs from the Atelier Mourlot. (Bureau du Festival, 84000 Avignon, France.)

Besancon (Sept. 1-17): The English Chamber Orchestra, the Orchestre National de France. the Camerata of Boston, the Ensemble Vocal et Instrumental of Lausanne and the Grande Ecurie et la Chambre du Roy are among the visiting ensembles. Programs will mark this year's Vivaldi and Schubert anniversaries, the tricentenary of the joining of Franche-Comte to France and Olivier Massiaen's 70th birthday. The 28th annual competition of young conductors and the sixth festival of musical and dance film are also scheduled. (Festival de Musique de Basancon, B.P. 1913. 25020 Besancon, France.)

Berlin (Sept. 8-Oct. 8): The circus and its descendants are Circle," Beckett's "Waiting for featured, with an exhibition, a Godot," a musical work, "Le film festival, circus companies featured, with an exhibition, a

and related theatrical events. The Zurich Opera's Monteverdi trip-tych heads the opera program Art and artists during the Nazi era will be the subject of an exhi-bition. The centenary of the birth of the Austrian composer Franz Schreker will be marked in concerts and a symposium. The Berlin Philharmonic will be conducted by Karajan, Boehm, Giulini and Abbado, and Dietrich Fischer-Dieskau and Maurizio Pollini will do Schubert's "Die Winterreise." heading a rich concert and recital program. (Berliner Festwochen, Budapester Strasse 48%0, 1 Berlin 30.)

Warsaw (Sept. 16-24): The 22d festival of contemporary music in the Polish capital offers numerous visiting ensembles from East and West Europe, among them the Scottish National Orchestra and the Lyric Arts Trio of Toronto, as well as programs of electronic and computer music. Events are spread out from noon to late at night. (Warsaw Autumn, 27 Rynek Starego Miasta, 00-272 Warsaw.)

Perugia (September): The 23d annual Sagra Musicale Umbra offers the customary programs of sacred and quasi-sacred music, including opera, choral, orchestral and organ music in Perugia and surrounding Umbrian cities (Piazza Italia 19, Casella Postale 341, 06100 Perugia, Italy.)

-DAVID STEVENS

said when no one else can—Avck-

GIVE US TWO WEEKS. WE'LL GIVE YOU A NEW LANGUAGE.

At Berlitz, our exclusive Total Immersion program puts you in command of a new language in just two to six weeks. Because your instructor lets you speak only the language you're learning all day long. Even during lunch. Once overseas, you can further your training. Call today for an appointment. You'll be speaking a new language faster than you ever thought possible.



Paris-Opéra, tél.: 742.13.39 - Cannes, tél.: 39.26.86 - Nice, tél.: 85.59.35 Translation services and private programs for any language are available on request

15 locations in France. "Berlitz" and "Total immersion" are registered service marks of the Societé Internationale des Ecoles Berlitz.

PARC DE VALBONNE* CÔTE D'AZUR * 20 minutes from Nice International Airport

International school, with boarding facilities,

run by a foundation for the education

of children of all countries in their mother tongue

and in French.

• Bilingual International Baccalaureat. Prepa- • 8 residential buildings with single rooms

Complexe Scolaire et Educatif de Valbonne-Sophia Antipolis

Enrolments accepted now for school year beginning September 1978.

Details from "La Mission Laïque Française", representative for France and other French speaking countries of the "Office du Baccalauréat International de Genève".

Mission Laïque Française, 8, rue du Général Clergerie 75116 Paris, France - Tél. 727.96.92 - Télex : Mission 610 880.

students' ages.

and riding available.

club, T.V., library, cafeteria.

ration from the 7th grade. Easy re-entry at any

• Education in two languages of which French

compulsory. Second language options: En-

Permanent boarding "village"; students can

be accommodated all year round, including

ALLIANCE FRANÇAISE

101 Boulevard Raspail (6e). Tel.: 544.38.28.

The oldest & Most modern French school for foreigners

Practical school of French language - Lectures - Language loboratory - Private lessons - Courses on all levels, all year-round, including Easter and Summer courses-Cinema-Phonetics laboratory, YOUMAY ENROLLAT ANY TIME!

Preparation for Diploma of Commercial Interpreter in French.

BAR — RESTAURANT — ROOMS

-WANT TO SPEAK FRENCH?You can, through the "TOTAL APPROACH" to French,
a unique and proven 4-week program on the Riviera

a unique and proven s-week program on the sivierd proven s-week program on the sivierd proven special of the sivierd proven special provincial proven special proven special proven special proven specia

level in national institutes of education.

glish, German, Arabic, Spanish, Iranian.

French Baccalaureat A, B, C, D.

SWITZERLAND

INTERNATIONAL Ranger Camps WITZERLAND



Very special camp in very special cor-ners of the world CO-ED 8-15 JULY-AUGUST 31st Season Sports, sight-

Accredited American Camping Association. First-class references.
FOLDER, CH-1854-A Leysin,
Switzerland, Tel.: 1,941/25 6.21.50.



EDUCATION AT THE LAKE OF GENEVA SWITZERLAND

 American high school,
 General, certificate of education
 Sports, study trips, summer camps L'ECOLE NOUVELLE offers you an Write to: Yves Le Pin, director,

American

College of

Switzerland

1854 (R) Leysin, Switzerland

Alpine Campus

Above Lake Geneva

with degrees conferred

under US authority. Europe-

wide field research, study

Co-ed, boarding. 40-nation

ACS

tours. Skiing at doorstep.

Where the nations meet

student body.

BA, BS and AA programs

ECOLE NOUVELLE. CH-1012 Chailty-sur-Lausan Phone: 21/32 11 22

SWITZERLAND



July-August:

SUMMER CAMP IN SWITZERLAND LE CHAMP DES PESSES

LE CHAMP DES PESSES, CH-1618 Chatel-St.-Denis s./Montreux.

Tel.: 021/56 70 37.

FASHION MERCHANDISING, FASHION OR INTERIOR DESIGN

We are an American College with approximately 200 international students. AA and BA level degrees. Fashion and Interior Design study trips. Selected students participate in study programs in U.S., with Emilio Pucci in Florence. Simpson (Piccadilly). Ldt., in London. Hermès in Paris. Recognized by the Federation of Swiss Private Schools. Affiliated with Univ. of Wisconsin-Stout. rican faculty. Dorm and dining facilities available. Placement assistance.

Write for catalog

Quarters begin Sept., Jan., March,
plus summer sessions

THE AMERICAN COLLEGE
IN LUCERNE, Switzerland
Tribschenstr. 9 CH-6005 Lucerne
Phone 041 - 44 17 22

ITALY

Parents, prepare your children for the Europe of tomorrow. Send them to THE INTERNATIONAL SCHOOL OF MILAN

With American Section. From Kindergarten through College Entrance. London University C.C.E Exam Centre No 96515. Transportation facilities (Milan area). lunch; Sports.

Write for prospectus to: Miano Via Bezzola, 6 Ph. 4524749 Headmaster, A. Ara M.A.

NOTRE DAME INTERNATIONAL SCHOOL



Conducted by the Brothers of Holy Cross BOARDING AND DAY SCHOOL FOR BOYS SINCE 1952 Lower school division - grades 4-8. Full program of academics, activities, and sports. Self-contained classroom organization and special teachers for art, languages, music, and physical education. Instruction in English as a second language. Separate library, symmasium, swimming pool, and playing fields. American methods and curriculum. Full-time suidance consistent. Field trips and cultural fours. Visit the school or write for an illustrated brochure. Brother Joseph McDonnell, CSC Principal. Via Aurelia 796-00165 Rome, Italy, Phones: 626.051-626.071

JOHN CABOT INTERNATIONAL COLLEGE

LIBERAL ARTS/BUSINESS MANAGEMENT: (B.B.A. program). Affiliations: Hiram College, Ohio, U.S.A (Founded 1850).

Accreditation: Transcripts issued in U.S. for any American University. American Assembly Collegiate Schools of Business.
 Association International Colleges and Universities
 European Council of International Schools
 Neur East South Asia Council Overseas Schools.

CABOT COLLEGE (Box A) YIALE POLA 12 ROME Tel. 855241 Authorized Italian Ministry Education, decree July 22, 1976, No. 31-32.

AUSTRIA

SEA PINES ABROAD

A-5324 Faistenan bei Salzburg AUSTRIA

An American preparatory school nestled high in the Alps. Grades 9 thru 12 plus PG. Co-educational, Boarding. Highacademic standards. Skiing. Supervised travel. Deservator Write for Catalog verservator

AUSTRIA



Court closed

Ca-ed boarding 4th-12th grade, enrollment limited to 40

Excellent formal study program, latest USA curriculum

A-8744 Luch / Stem.

Tel, 05583/285

Small teacher-student ratio, daily ski-training

July/August, Intensive German and English Courtes,

Sports and Culture Trips, Handicrafts.

SPAIN



KING'S COLLEGE English School in Spain Madrid and Palma de Mallors rs and day pupils. Boys and girls from 3 years to University entrance.

Preparation for the G.C.E. to "O" and "A" level, and for the intern

laformation: KING'S COLLEGE, Avda. de Stuyck, 1. Madrid, 16 Tel. 458,1580 - 259,2767.

AMERICAN SCHOOL of Mailorea Coed day K-12 and boarding 7-12. Small classes, expert teachers, individualized instruction yield excellent educational results. College entrance preparation, industrial arts and secretarial courses. SAT and ACT Testing Center. Year-round sailing, tennis and riding.

American School admissions.
Tel.: 67.58.50 - 67.58.51. Cable: AMSKOOL. Telex: 68667.
Iresa: American School. Calle Gratorio Portals Novs, Mallorca.

GREAT BRITAIN

The TASIS Programs, WINTER SESSION SUMMER SESSION

The American School in Switzerland

Since 1956, offering highest American college preparatory academic standards. Grades 7-12, -+PG year-, coed, boarding and day. Extensive travel, sports, activities. St. Moritz Ski term.

TASIS England A branch of The American School in

The TASIS England Summer School

Intensive 6-week American high school creditcoursesin English, French, History, Math, Science, Art, Drema, Coed, boerd-Switzerland, 20 acre campus in Thorpe, Surrey, 18 miles from central London, Coed, grades 5-12, boarding and day. ing and day, age 14-19. Sports, activi-

Le Château des Enfants

Two one-month: sessions of fun and learning for children age 6-12. Sports, arts and crafts, excursions, and camping. Lessons in French or English. Careful supervision.

Contact: TASIS, CH 6926 Montagnola-Lugano, Switzerland. Tel: (091) 546471, or Coldharbour Lane, Thorpe, Surrey, England, Tel: (Cherteey) (09328) 65252

ST GODRIC'S SECRETARIAL AND LANGUAGE COLLEGE

2 ARKWRIGHT ROAD. LONDON, NW3 6AD, TEL: 01-435 9831,

U.S. CAMPS GOLF / TENNIS-**CHASE CAMPS** in New Hompshire

& Pearsylvania

• 58 outdoor/indoor tennis courts

• 18-hole championship golf course

• 4 Hours delly instructions e precise

• play • supervised evening program

• co-ed c ages 11-17. Nell Chese, 8ex

—1,146H, Monchester, Mass. 01944.

Calvert School CGINVEST SCREOI

Kindergarian through 8th grade. Consplete harno-study course for elegentatory-level students. An American education extravelere in the world. Ideal for enrichment. Home in the classroom, you are the teacher with Colvert's approved step-by-stop instructions. Start any time, transfer to other achoels. Used by over 300,000 students. Non-profit. Write for catelogs. Admits students of any rece, color, nationality or effinic origin.



Child's Age.....gr.

Don't miss the herald Tribune's special advertising feature on

EDUCATION

which will be published on Friday, May 5, 1978

For information or to place an advertisement, contact our office in your country (listed in Classified Advertisements) or Francoise Clement,

International Herald Tribune, 181 Avenue Charles-de-Gaulle, 92200 Neuilly-sur-Seine. Telephone: 747-12-65. Telex: 612832,



LEARN FRENCH

ON THE FRENCH BIVIERA—Near NICE and MONACO
All levels. All ages. Small dasses. Excursions. Sounding and Day School
for Adults. Estab. since 1952. A non-profit tratitate recognized by the
french Ministry of Education. 5, 4 or 3-week courses begin May 1st,
May 29, July 3, Aug. 7, etc.
12-week intensive course begins Oct. 2, 1978.

English brochure: CENTRE MEDITERANEEN D'ETUDES FRANCAISES

(2012) Com 401 (Brusses) Bhusses (2011) 4 23 74 06320 Cap d'Ail (France). Phone: (93) 06.81.54.

ROSEHILL INTERNATIONAL SCHOOL

SWITZERLAND

St. Gallen

or rooms with 2 or 4 beds, depending on

Gymnasium, open air sports, swimming pool,

tennis; sailing and skiing within easy reach; golf

• Numerous leisure and cultural activities (silk

screen printing, weaving, model making...) film

Mini-hotel for parents visiting their children.

School Foundation Well-established co-educational school.

Coilege preparatory program with Advanced Placement. Official Test center for American CEEB. Oxford GCE and Royal Society of Arts Examination Board Commercial Studies. Small classes. Holiday Language Courses: JULY and AUGUST. Next school year begins August 28,1978.

Write for details to the Dean of Admissions, Rosehill International School, Höhenweg 60, CH-9000, St. Gallen, Switzerland.

YOUR CHILDREN'S VACATION WELLSPENT Boys & Girls 8 to 16. ACA Accredited 7th year.
 Three Two-Week Summer Sessions.
 Resident, Adventure, Riding, Canoelog & Saling Camp
 Soccer Camp with Mariin Chivers in Geneva. VILLERIOS Brochure: CHALET SENECA • 1854A LEYSIN • SWITZERLAND TEL (025) 6 11 58 - (022) 76 20 59.

VILLAGE CAMPS IN SWITZERLAND



Till

Se de la constante de la const

The Confusion at Islamic Auctions

By Souren Melikian

ONDON, April 7 (IHT)-Af-L ter a nine-day round of Islamic art sales which started in London March 29 with a carpet auction and ended yesterday with coins, the picture that emerges is one of continuing price confu-

The zigzagging prices go to extremes often unrelated to quality. This cames out strongly in the sales of manuscripts and minia-

tures. The Tuesday sale held at Sotheby's offered some particularly striking contrasts. The items included Persian miniatures of the 14th to the 17th century, manuscripts of the same period and 19th-century oil paintings done under the Qajar Dynasty.

Lot 8, an excellent miniature painted in Shiraz in the last quarter of the 15th century, was knocked down at only £198. Less than 10 minutes later, lot 21, a late 16th-century drawing of a youth standing in a landscape, badly stained and worth less,

made considerably more at £462. Soon after, some very good miniatures of the 19th century could be bought for ludicrously low prices. Lot 40, a fine miniature painted about 1820, could not have been cheaper at £27.20. And lot 57, an excellent study of a wandering ascetic or dervish of the mid-19th century, was given

By Henry Pleasants

ONDON, April 7 (THT)-

About halfway through the

first act of Bohuslav Martinu's

"Julietta," given a British premiere by the New Opera Company

in association with the English

National Opera at the Coliseum,

one of the characters remarked:

"Everything's quite clear"—and

the house exploded with laughter.

thing was anything else but. For

this opera, dating from 1938 and

based on a play by Georges

Neveux, notoriously controversial

in its time, is an adventure in sur-

realism, pure and simple. At that

point in the first act the audience

has not had time to come to

terms with the fact that what was

afoot was a dream, and that what

was up might well be down-or

That first act, in which our

hero, Michel, finds himself in a

vice versa.

"Clear" was just what every-

Frankfurt.

Since Qajar art has been much less in demand of late, these low figures might have been understandable if the oil paintings of the same period had not been selling for huge prices. A portrait of the eldest son of King Fath Ali Shah, painted in 1814, went up to £66,000. The signature of a well-known artist called J'afar and the historical interest of the portrait partly explain this price, but they do not make up for the dull color scheme. Another portrait of King Fath Ali Shah himself, done in the same year by the famous court artist Ali, rose to £104,500,

a fabulous price. Ironically, the finest painting, a portrait of a woman playing the lute, was the cheapest of all. Unsigned but attributed by several Iranian connoisseurs to the painter Mirza Baba, it was bought for £35,200 by Tehran collector Samad Khorshid.

On the following day, the price of £6,600 paid at Christie's for a dagger and matching scabbard in polychrome enamels showed that, indeed, the Qajar market is still doing very well, making the underpricing of the miniatures all the more paradoxical.

Similar vagaries, however, could be observed in virtually

every category. On Monday at Sotheby's, one

Music: Martinu's Surrealist Adventure

But a second-act idyli with an

unpredictable Julietta in a kind of

sy fortune-teller who foretells the

past-has seductive charm. A last

act, set in the central office of

dreams, with our hero reluctant

to awake, and finally opting for

further pursuit of the elusive but

ubiquitous Julietta in dreamland

as preferable to the humdrum of

reality, exercises an irresistible

Spoken Text

from the fact that much of the

text (in English) is spoken, quite

enough of it, indeed, to demon-

small coastal town inhabited by strate that nothing is gained in Roberts as Michel and Julietta.

This last act benefits greatly

of their own.

amnesiacs, where he alone has the composition of opera by a

any remembrance of anything, is kind of singing that, while pro-

a trying 45 minutes, and there duced by singers, is certainly not

were those among the audience song, and is not only less intelligi-who, at the intermission, reported ble, but also, in the end, less mu-

magic forest-enlivened by a gyp-orchestra, as incidental music to a

difficulties in fighting off dreams sical than speech.

away at £38.50, the price paid by the earliest miniatures from a fa-Iranian dealer Motamed of mous manuscript of the mid-14th mous manuscript of the mid-14th century went up to £110,000. That is rather a lot, given the amount of restoration work, and it might suggest renewed interest in that transitional period of Persian miniature painting. This assumption is, however, belied by the low price of £1,900 paid for a page of the same period with a fine miniature cutting across the page in horizontal format.

Fine Manuscript

On the following day at another auction of miniatures, also held at Sotheby's, some pieces were mysteriously overlooked, such as an outstanding manuscript of the poet Jami's works, dated 1504. This was only 19 years after Jami's death, making it an important manuscript for future critical editions. The superb calligraphy and illumination strongly suggest that it must have been prepared at Herat, Jami's

city. At £990, it was a giveaway. Even more astonishing was the price of £825 for a miniature illustrating a battle. The style leaves little doubt that it was painted by, Mohammad Mo'in, a famous artist of the second half of the 17th century. The catalogue was silent on this score, nor did it properly identify the subject, which was taken from a well-

known historical chronicle. And here, indeed, lies one of

As is true of most operas com-

posed since "Turandot" (1926),

the musical action is in the

play, or as a kind of underscore.

finely wrought and highly effec-

tive, especially as played by the

ENO Orchestra under Charles

Mackerras. "Julietta" would have

worked better, come to think of

Anthony Besch's production,

with appropriately surrealistic

sets by John Stoddart, has all the

virtues one has come to expect at

the Coliseum, including many ad-

mirable characterizations in sup-

porting roles. And there are

splendidly sympathetic perfor-

mances by Stuart Kale and Joy

it, as a ballet.



of too many fakes and, above all, retouched paintings or heavily weakness of auction-room cata-

There were some surprising bloopers in the Islamic Week's catalogues. In Sotheby's Tuesday sale, a manuscript of S'Adi's works executed in 1496 is located in "Turkey," while the page reproduced in the catalogue carries the final inscription specifying it as copied at Qazvin, northwest of Tehran. In the same sale, charming Qajar miniature portrait of a woman had a caption in Persian identifying it as the portrait of a woman from Sivand, a well-known village of the Shiraz area. The catalogue assures us that the inscription calls her "the wife of Siwand Tardik of Shiraz."

Doubtful Signature At an auction conducted last week in Paris fine Koran was said to be by "Nishapouri." No such name was to be read in the Koran and this is not a complete signature anyway. At least three calligraphers include this word in their full

Most unexpected, however. was the misreading of a cartouche inlaid in gold on the steel blade of a sword sold at Sotheby's Monday. The Arabic inscription, "I have entrusted myself to God," often seen on weapons, was read as "Kalb Ali," who, the

catalogue goes on, "is said to be

the two basic causes of the uncer- the son of Asadallah of Isfahan tainties and unhealthiness of the the most prominent bladesmith market. The first is the existence in Persian history." The 19th-century look of the calligraphy and the strongly Turkish appearance made-up objects. The other is the of the scabbard might have warned the cataloguer that he hadn't got it quite right.

Sooner or later, these little mistakes get known and deter most Western buyers. And Eastern buyers have become both considerably more discriminating in their buys and more sophisticated in their approach to the market and its many trans.

By far the best manuscript in London, an outstanding Book of Kings illustrated with 62 miniatures painted in Khorasan in 1602, was bought for £341,000 by a well-known collector, Mas'udi of Tehran. It is a key work for its period and one of the finest of that school, which makes the price acceptable.

The presence of Middle Eastern dealers is now becoming overwhelming. The latest European gallery specializing in "Islamic and Persian art" was maugurated on Tuesday on Clifford Street, a few steps away from Sotheby's, by Naser Khahili of Tehran.

In the middle term, this presence could lead to a more perceptible connection between price and quality. But it also introduces a further element of instability. The slightest threat of unrest of any nature in the Middle East could be enough to halt purchases from the area and precipitate a

Around Paris Galleries

tural Center, 3 Rue du Dragon, Paris 6, to April 29.

Maurice Sendak is an illustrator of exceptional value who has succeeded in preserving the best qualities of his 19th-century predecessors while giving his drawings the freshness of modern attitudes. Parents looking for books for small children gratefully discovered the "Little Bear" books, for instance, in which the story and the illustrations are perceptive, imaginative and warm. Sendak joins Beatrix Potter Shepard, the illustrator of Winnie the Pooh and other books, in the "ranks of the tender, gifted, inconspicuous benefactors of mankind. * * * . . .

Gilles Ailland, Galerie Karl Flinker, 25 Rue de Tournon, Paris 6,

to April 27. Aillaud's subject is the zoo, and at first sight he seems to treat it with an unusual, sub-photographic detachment. The cages and pits in which the animals are enclosed are sinister—the paintings themselves often present one with effects of imexpected beanty, nonetheless-and the animals are no more than inert and shapeless heaps of fur or skin in many cases. Is that a seal, or a large garden slug? But that is, of course, the way we actually do see some animals on occasion. Aillaud's intention becomes apparent through the very persistency with which he pursues it. As a painter he is a very good craftsman, but he is also a man with a message for the mind. Nor is it a simple message. His zoo is like some sort of encyclopedia where living creatures are captives in cement slots. Here we have a hippopotamus (a

Poussin Painting Permanently Flawed

LONDON, April 7 (AP)—Nicolas Poussin's "The Adoration of the Golden Calf," slashed by a vandal in the National Gallery, is permanently flawed, a gallery

spokesman said today. Salvatori Borzi, 27, an Italian, is being held on charges of crimi-nal damage to the 17th century French painting, which was val-ued at nearly \$1 million. The gallery spokesman said that although the picture "can be repaired it will no longer be possible to regard it as a complete example of Poussin's art at its greatest."

Maurice Sendak, American Cul- first-rate painting). You don't see much of the animal really, but then, a real hippopotamus is not only that gray body, vanishing under the sumptiously filthy water-it is also the Nile. Aillaud's theme seems to be the reductive violence man exercises on words, concepts (animals perhaps) and other men. This is a suprisingly paradoxical ocuvre which Aillaud has been singlemindedly producing since at least the past 15 years, until the very oddness he conveys begins to fill with meaning and we begin to no-

> Realisme et Poesie dans la Peinture Russe, Grand Palais, Paris 8, to May 15.

> An exhibition of 86 paintings illustrating, sometimes with considerable charm, the directions taken by Russian painting be-tween 1850 and 1905. The public outside Russia has had little opportunity to discover the works of artists who shared the preoccupations of a Dostoevski or a Tolstoi. The half century covered by this show was one of profound change, and the art movements themselves show an interesting diversity. One of the prime forces

was the Society of Traveling Ex hibitions set up by a group of arrists in 1870 with the intention of developing the people's love for art while reflecting the serious in terests of the people. Russian art ists, on the whole, seem to have had a defensive attitude toward Western influences during that period, and it would be a mistake to assume that formal similaritie between some Russian and West ern paintings reflect a similar out look. In any event, there is much to charm one in this show, strong love of light and nature it many works, (Chickin, Iarochen ko). The historical painting themselves, so tedious in the French School of that period have a certain power of persua sion (Surikov, Schwartz). A num ber of artists dealt with curren events (Repin) or tragedies o daily life (Perov, Ivanov) in a sur prisingly sober manner.
—MICHAEL GIBSON

AUTHORS WANTED



PORTUGUESE TILES. PANELS.

Show Sat & Sur_ aftern Ch. Bruxelles 374. 1410 Waterloo, Belgium

DOIVATE COLLECTOR OFFICES: "CHRIST ON THE CROSS"

P.P. Rabons. 365 mm. x 257 mm Cordificate 1921 Rubonamusoum Antwerp. B.Fr. 9 million. "LAST PRAYER OF A CONVICT" P.O.Box 542, Lo



DIEGO VELASQUEZ'S SIGNED MASTERPIECE **DATED 1627**

At present, Mademokelle Theres Standour, 7, Rue Fetis, 1040 Bran incipals only and she would in lar like to renew the contac

GREAT

ARP - BRAQUE - CALDER MAX ERNST - GILIQLI

LE CORBUSIER - LEGER LURCAT - PICASSO

Until April 15

LA DEMEURE

19, Rue Lagrange (Pl. Maubert 3rd floor, 75005 PARIS. Tel.: 326.02.74 - 033.83.59.

Open daily exc. Sunday & Monday, from 10 g.m. to 1 p.m. & 2 to 7 p.m

AUCTION SALES

Sotheby Parke Bernet

Sale by auction Thursday 20th April at 11 am

Highly Important Jewels

including the property of His Grace the Duke of Northumberland, K.G., T.D., F.R.S.



The two large emeralds in this magnificent Regency brooch are believed to have descended to the present Duke of Northumberland from Clive of India, grandfather of the third Duchess. Apart from its exceptional colour, the larger emerald is distinguished by fine carvings carried out around 1620 in the reign of the Emperor Jahangir and which are probably the first of their kind.

Sotheby Parke Bernet & Co., 54-35 New Bond Street, London WIA 2AA Telephone: (01) 493 8080 Telegrams: Abinitio, London Telex: London 24454

AUCTION SALES IN VERSAILLES (FRANCE) UNDAY, APRIL 16, at 2:15 p.m. UNPORTANT OLD MASTER PAINT

ith court, TAPESTR

MDAY, AML 16, at 2 p.m.

200 PAINTINGS Great and Little Marts of the late XIXth cent. _{em} 1900 to dete

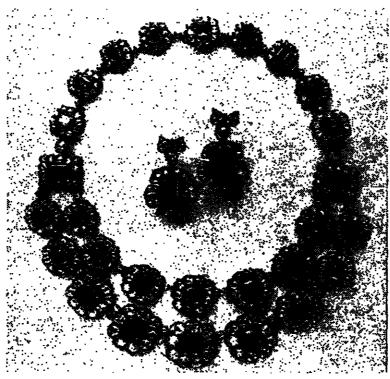




of London

Sales by Auction in Geneva

Monday, April 24 to Friday, April 28



antique emerald and diamond ear-pendants, to be sold on Thursday, April 27.

The week's series of important sales include Jewellery, Russian Works of Art and Faberge, Objects of Vertu, Watches and Clocks, Silver, Porcelain and Wines. On view at the Hotel Richemond, Geneva from Friday, April 21.

Please address requests for catalogues and all inquiries to one of the following:

Dr. Géza von Habsburg, Christie's (International) S.A. 8 Place de la Taconnerie, 1204 Geneva. Tel: 28 25 44. Telex: Geneva 23634.

Princesse Jeanne-Marie de Broglie, 68 rue de l'Université, 75007 Paris Tel: 544 16 30, Telex: Paris 200024.

LONDON

ROY MILES

Victorian Paintings **Old Masters**

6 Duke Street St James's London SW Gallery Hours: Monday-Friday 10-5

LEFEYRE GALLERY 19th & 20th-century PAIRTINGS Mon.-Fri., 10-5; Sat., 10-1. Bruton St., W.I. 01-493 1572

ALWIN GALLERY 9-10 Grafton Street, Bond Street, W.1. 01-499 0314. London's Leading

Sculpture Gailery

4 Old Bond St., London, W.1. ndian painting Maghal and Rajput 1500-1850

> Until 3 May. Sats 10-1.

> > MILAN

GALLERIA DELL'USES VIA BIGLI 17, MELAN. 3 AMERICAN SCULPTORS ABBOTT-ROCKWELL-WEII

PARIS

125 Gal. de Valois - 296.29,10 TAPESTRIES

RAUSCHENBERG collages GALERIE SONNABEND

WALLY FINDLAY Galleries International

ART BXHIBITIONS

primitive paintings First exhibition

in Paris

post-impressionnists 2, avenue matignon

ru. sat 10 am. Wally Findlay George V Hotel George V - 723.54.00 MICHEL-HENRY

SEBIRE - SIMBARI 31, av. George V. - Paris 8° sund**ay -** 7 p.m. - 4 p.m.

GALERIE MERMOZ PRECOLUMBIAN ART 6 tue Jean-Mermoz 8± 359.82.42

LE BALCON DES ARTS

141 Rue St.-Martin. Paris-4e - 278.13.03

PAUL JENKINS LARGE FORMATS

Exhibition presented by KARL FLINKER

April 6 - May 6

GALERIE ISY BRACHOT 35 Rue Guénégand, Paris-6e - 033.22.40

PAUL DELVAUX

GALERIE MARCEL BERNHEIM-CHAGALL - DALI - DUFY - ERNST - GRIS - KLEE

LEGER - MAGRITTE - MIRO - MODIGLIANI - MONET PICASSO - RENOIR - UTRILLO - YLAMINCK

-35 Rue La Boétie, 75008 Paris. 359-14-45...

GALERIE DROUANT

52, Fbg. St.-Honore, 75008 PARIS. 265.79.45

Until April 25, 1978.

NYSE Nationwide Trading 3 p.m. Prices April 7

Emrs El 1,20 Emery In 59 Emery In 59 Embort 1,50 Emrs Color 1,20 Equita 2,20 Emrs Color 1,20 Excel 0 1,40 Ex

Fed NAM 1 Fed PA 90 FPOP FR 20 FdSigni Fed DS 1 1.60 Ferro 1.44 Fibrabd Fidest 1.40 Filtrol Fisher 1.20 Finised 1 Firestin 1.10 Fisher 1.20 Fisher 1.20 Fisher 1.20 Fisher 1.30 Fisher 1.30 Fisher 1.30 Fisher 1.30 Fisher 1.30 Fisher 1.32 Fisher 1.34 Fisher 1.3

FischM 1.30
FishF6s .80
FishF6s .36
FishF6

FordM 1.24
FOMK pt 1.90
FtDear 1.24
FtHowP .88
FosWh 1
Fotomat .50
Foxbre 1
FrankM .30
FrpMin 1.60
Frightn .19e
Frueht 2
Fugus .40

GAF 40
GAF 71.20
GATX 1.80
GATX 1.80
GATX 1.80
GATX 1.80
GCA.15
GDV
GFEap
Gable
GamSch 1.40
GamSch 1.40
GamSch 1.40
GamSch 1.40
GamSch 1.40
GamCable 1
GGMCable 1
GGM

Heinz pf1.70
HeierneC
Heilerint 1
Heimr P.36
Herston 3-Hernicas 1
Hernicas 1
Hernicas 1
Herston 1.40
Herston 1.40
Herston 1.40
Herston 1.40
Herston 1.40
Hernicas 1
Hellion 1.10
Hebir 1.40
Hillenbd .94
Hillenbd .95
Hillenbd .96
Hillenbd .97
Hillenbd .97
Hillenbd .97
Howe .97
Hillenbd .97
Howe .97
Howe

ICIND 1.52 ICIN pf1.50 ICN pf1.50 ICN INACP 2.60 INAIN 1.59a IUIN 1.90 Ident 1.32b IIPow pf2.84 IIPow pf2.84 IIPow pf2.84 IIPow pf2.84 IIPow pf2.85 IIPow pf2.86 IIPow pf2.86 IIPow pf2.86 IIPow pf2.86 IIPow pf2.86 IIPow pf2.86 INCO .80 IncCop IncIM pf12

Indim pt2.15
IndiGos 2.20
IndiGos 2.20
IndiGos 2.20
IndiGos 2.20
IndiGos 2.20
IndiGos 1.30
Inser R 3
Inser

KLMAIr Kmart 56 KolsrA 1.40 KolsCe 1.61e KalCe pf1.37 KolCe pf2.30 Korst 1.50 Koneb 50 Korst 1.50 Koneb 50 KCryPt 2.56 KCSoln 2 KonGE 1.80 KonG

LFE LANIM LTV

(Continued on Page 10, Col. 1)

2134+ 14
3314- 16
946
646+ 14
644+ 15
3016+ 16
1014+ 16
376- 16
5
3316+ 15
2316- 16

2 inspecteurs exportation

Parfums Christian Dior

Partums et Cosmétiques recharchent 2 INSPECTEURS EXPORTATION àgés de 28 ans minimum, de formation commerciale supérieure, parlant couramment anglais et allemand, ayant acquis une expérience de l'exportation de produits de toce ou de grande consommention, ayant un bon contact et des réflexes rapides, ils seront respensables de la commercialisation et de la promotion des lignes de produit dans une zone géographique regroupant pluseurs pas de seurs pays.
Localisation Saint Jean de Braye (Criéans).
Localisation Sera stimulante et fonction



MARKETING MANAGER

Directly reporting to the President Annual salary : 50.000 U.S. dollars (still negociable, depending on capabilities and post-records of candidates), company car and other interesting fringe benefits.

A major multinational apparel company seeks a marketing manager for its Continental Operations employing some 1000 people in production, sales and marketing activities concentrated in Germany, Belgium, Holland and France. Candidates should have demonstrated success in developping apparel product lines, for men, women and children, in the leasure-wear area. The successfull candidate is expected to live or move within short period of time to Belgium (Brussels area).

Reply to: R. HEIM - Tulpenstraat 34 1640 ST-GENESIUS-RODE (Belgium).

CE Process Equipment Europe, representing leading U.S. companies seeks

PRODUCT MANAGERS

Candidate should be graduate engineer with 5-10 years experie engineering/sales and fully bilingual.

Travel to other countries will be expected. Job site: Neufly, France.

Send resume and salary requirements to:

CE PROCESS EQUIPMENT EUROPE 1-3, Rue du Chateau, Neuilly 92200, France

Attention T.G. Phillips

The American School of Paris

(founded in 1946 - 950 students)

seefa its BUSINESS MANAGER

- long range financial and facilities planning, bedgetary controls and cash flow manage

working relationships with school director: hosignoses and government agencies, etc

The successful candidate will be faily bilingual, faralilar with cost according. US and French according principles and small conspete:

All applications will be bandled in strictest confidence by a constiting form and will be replied to individually.

INTERNATIONAL HARVESTER **SOLAR GROUP**

QUALIFIED OFFICE MANAGER FOR OUR GAS TURBINE PARTS AND OVERHAUL FACILITY IN RIS-ORANGIS

The qualifications are DECS degree or its equivalent.

The position requires experience in cost occounting, and 4 years in a supervisory accounting function, including knowledge of French business.

The applicant must be fluent with French and English languages.

Sales forecasting, budgeting EDP systems credit and collection procedure and import/export procedures.

The position is III A in the metallurgy "codres" conv

Please telephone for an appointement to Mr. L. OLLIVIER Henry. Tel.943.30.17, Paris.

Go places with SNC!

A dynamic Canadian company, one of the largest in the engineerprocure-construct field, has an opportunity for

A Construction Planner to work on a major project in Ecuador.

This individual will be responsible for planning, scheduling, coordination and monitoring of construction progress on a multi-million dollar job. The position calls for the ability to assess the gravity of deviations of all project activities under the control of the Construction Manager. The Construction Planner will develop a detailed work schedule from CPM networks and, through liaison with subcontractors and their forces, will make sure that work is performed within the time limits set. This task calls for at least five years' experience, preferably in a developing country, in a similar position. Fluency in Spanish is essential.

The SNC Group is employee-owned, and salaries and benefits are excellent.

Look into a future with The SNC Group today.

Write or call Tom E. Ross 1. Complexe Desjardins P.O. Box 10 Desjardins Postal

Station Montréal H5B 1C8 Telephone (514) 282-9551



Sales Director

£16,000 + p.a.

Process Plant

Our client is a major growth company selling chemical plant internationally in the steel, chemical, petroleum and related industries. It is seeking a top flight individual to direct its sales

Candidates, men or women, should have good degrees in chemical and mechanical engineering and will be aged 35-45. You should have significant management experience in a relevant industry and have a successful background in negotiating major contracts internationally. The most appropriate background expenence is likely to be with a process plant contractor or as a Sales Director with an equipment manufacturing concern with complicated equipment and systems. Alternatively, you may have a business management

responsibility for technical speciality

products or services for the steel,

chemical and petroleum related

industries.

The position is based in the London area and applicants are sought from the highest calibre individuals who have the stature and ability for further progression. Our client will welcome applicants from any European nationality since expatriate arrangements are available.

Applications should include details of current salary and contact telephone number. Ref: A8608/IHT REPLIES will be forwarded direct. unopened and in confidence to the client unless addressed to the Security

Manager listing companies to which

include comprehensive career details,

they may not be sent. They should

not refer to previous correspondence with PA and quote the reference on the

PA Advertising Hyde Park House, 60a Knightsbridge, London SW1X 7LE. Tel: 01-235 6060 Telex: 27874



AVAILABLE

American resident in Madrid seeks MANAGEMENT POSI-TION OR RETAINER IN SPAIN EXTENSIVE EXPERIENCE IN Agent/Dis-tributor Formation Licarding-John Ven-tures in Spain, Portugal and Latin America, Would consider investing. Ex-

!International Executive Opportunities"

Tuesday, Thursday

To place an advertisement contact your nearest Herold Tribune representative

EXECUTIVES

Reply: P.O. Bax 36, 148 Madrid, Spain.

appears every

& Saturday

or Max Ferrero.

181 Ave. Charles-de-Gaulle, 92200 Neuilly-sur-Seine. Telephone: 747-12-65. Telex: 612-832.

PARIS, SATURDAY-SUNDAY, APRIL 8-9, 1978

31.4 34.4 16.5 36.5 17.5 27.6 16.7 27.6 16.7 26.5 16.7 16.7 17.7

Indonesia Role Dim

cant oil exporter far sooner than had been expected, sources say.

The country, now the ninthranked producer among the 13 members of the Organization of Petroleum Exporting Countries, could be a net importer of oil within 10 years, at least two oil industry surveys and a study by U.S. economic experts indicate, the sources say.

Indonesia's questionable prospects are also depressing hope for a revival of the Southeast Asian oil boom which collapsed in 1975-1976. Oilmen are convinced plenty of oil remains to be found, but the future pace of exploration and development is likely to be cau-tious and complicated.

Incentives Low

The potential is high but incentives are low, says Allen Hatley, regional executive for Cities Service and chairman of the Southeast Asia Petroleum Exploration Society. In a paper he delivered to a regional oil conference, he said that a major reason for the oil

Japan Surplus Seen Continuing

TOKYO, April 7 (Reuters)-

Export volume on a customs- areas. cleared basis rose in the first two months of this year-2.9 percent in January and 5.6 percent in February after being about un-changed in the final quarter last year compared with the third quarter, its monthly report said.

omy following active government capital spending for public works. It warned, however, that a further ration, production peaked at 1.7 appreciation of the yen could million barrels a day late in 1977 undermine the economic recoving Indonesia, and it was estimated

Separately, the Finance Ministry to place about 73 percent of its public works spending in the first half of the fiscal year and particularly in the April-June tempted to stimulate oil explora-

percent target in real economic some major concession." growth for the current fiscal year. "Tm afraid that time has al-This higher growth rate would ready run out," an industry exalso help Japan cut its current-ac- pert says. He noted that for the count surplus to \$6 billion in the most part, oil companies' explora-

W. German Oil Imports

ESCHBORN, West Germany, April 7 (AP-DJ)-West Germa-April 7 (Ar-DJ)—west ny's crude-oil imports fell 1.7 per-cent to 97.5 million tons in 1977, on 2 million tons in 1976, from 99.2 million tons in 1976, the government said today. This compares with a 10.2-percent rise last year. North Sea oil supplied donesia does not have a very large 10 percent of the country's crude cushion.

As Future Oil Power By George McArthur SINGAPORE, April 7—Indonesia may cease to be a significant momentum and flexibility that grew from sustained exploration throughout the area. This "is rap-

idly disappearing," he said.
Oil officials privately put most of the blame on President Suharto of Indonesia and, to a lesser degree, the government of Malay-

In 1975, with Indonesia's stateowned oil company Pertamina in a \$10-billion jam from what it lat-er termed "uncontrolled" man-agement and overspending Mr. Suharto needed money badly.

He unilaterally broke his contracts with all major oil companies—some only a year old—and imposed a 85-to-15 percent pro-duction split and imposed stiffer cost-recovery terms. Previously, the government took only 65 per-cent of the profits, after deduc-tions for recovery costs, with 35 percent going to the companies. Within the complex pricing-sys-tem of the oil industry, most companies found this bearable.

However, they complained vig-orously, but unsuccessfully, that the new split did not provide in-centives for exploration. And in Indonesia, most discoveries are relatively small, have a produc-tion life of about 5-to-10 years and continuing exploration is an

TOKYO, April 7 (Reuters)—
Japan's economic planning agency (EPA) said today there is no visible sign of a decline in the country's current-account surplus.

Export volume on a customs—

exponential said continuing exploration is an economic necessity.

As a result, exploration is an economic necessity.

Malaysia may suffer the same fate. The new government oil company, Petronas, openly fashioned on the Indonesian model but with far less expertise, imposed the same production sharing percentage. Moreover, it tried But the agency's monthly reto get greater management control through some share-juggling
bright spots in the domestic econbright spots in the domestic econvirtual standstill there, too.

While oil companies cut explothe government's oil-export earn-Separately, the Finance Minis-try said the cabinet has decided to billion.

Time Has Run Out

quarter.

The fiscal 1978 budget, which recieved legislative approval this allowances and pricing details. In week, earmarks 6.5 trillion yen January, he tried again. He called (about \$30 billion) for governin oil company executives from ment public works spending. the United States, Japan and En-With expenditures of public cor-porations taken into account, the seeking "mutually beneficial" re-total amounts to 11.8 trillion yen, lationships in new contracts. There was no public response The decision follows the government policy to promote public works spending to stimulate domestic demand and achieve the 7-

tion budgets have been set for this year, with very little provided for exploration in Indonesia. That would mean three years without new oil being found in any significant quantity.

tion. With proven reserves of only about 11 billion barrels, In-

O Los Angeles Times

Ocean Mining Profitable, Computer Model Shows

CAMBRIDGE, Mass., April 7 (AP-DJ)—Deep-ocean mining of key minerals could be profitable, according to scientists at the Massachusetts Institute of Technology.

In a report to MIT's Sea Grant program, scientists say mining the ocean floor could yield a long-term return on investment of 15 to 20 percent. The idea is to scoop, or vacuum, ferromangar nodules from the sea floor. Such nodules, averaging about the size of tennis balls, are found in abundance, particularly in some parts of the Pacific Ocean, the report says.

By running data through a computer model of such a mining venture, the MIT group reckons annual revenue through the sixth to 30th year might be about \$250 million after operating expenses of \$100 million. They also figure the recovered nodules would contain about 1.5 percent nickel, 1.3 percent copper, 0.24 percent cobalt and 26.9 percent manganese.

The study was compiled by MIT students under the direction of J.D. Nyhart, an associate professor of management at MIT's Sloan

The purpose of the model is to enable governments and companies to analyze how various policy options and economic factors could affect a deep-sea mining venture.

Although the model is flexible and able to use a variety of different assumptions, the basic venture it is concerned with involves a "mine site" about 18,000 feet below sea level, about 2,640 miles from the nearest port with about two pounds of nodules per square

The venture would require investment of about \$560 million before it began to return any income from the sale of refined minerals. According to the report, four concerns have spent an estimated \$100-to-150 million on ocean prospecting, exploration and research

Members of these groups included affiliates of U.S. Steel, Sun Oil, Kennecott Copper, Inco Ltd., Standard Oil of Indiana, Royal Dutchhell group and Lockheed, among others.

Stocks Gain In Active **NYSE Trade**

Fed Report Calms Tighter Credit Fears

NEW YORK, April 7 (IHT)— Prices on the New York Stock Exchange rose slowly but steadily from a mixed beginning to finish broadly higher in active trading. Analysts said investors were

pleased by the money-supply figures released yesterday showing a much smaller gain than expected, indicating the Federal Reserve Board might not have to tighten credit as much as had been thought

In addition, they said the market's ability to eke out a small gain yesterday despite disquieting news on inflation was a big plus. The Dow Jones industrial average gained 5.63 to 769.58. Volume totaled 25.16 million

shares, down from 27.36 million yesterday.
Advances led declined 846 to

Airco, delayed at the opening rose 5% to 49% and Martin Marietta gained ¼ to 26%.
Talcott National rose ½ to 4% and Gull & Western gained 5.63

to 769.58. Marshall Field rose 41/2 to 24 and Holly Sugar 3% to 24%.
Warner Communications gained 1% to 36, Superior Oil six to 251, Vornado 1% to 10%, Ansul 1% to 10%, Becton Dickinson 1% to 37% and Centex 1% to 14%.

Electronics stocks were strong with Teledyne up three to 791/2, Texas Instruments 1% to 67%, Memorex 1% to 35% and Applied Digital Data one to 15.

Amex Index Record American Stock Exchange pric-

es closed sharply higher in active

The Amex market-value index rose 0.96 to 131.81, a new 4½ year high

In Chicago, wheat closed sub-stantially higher, corn and soy-beans irregularly higher and oats higher on the Board of Trade. Good export sales in corn and soybeans, and rumors of possible wheat business with China triggered an active supportive mood across the floor.

sion houses.

South Korea Reserves

SEOUL, April 7 (AP-DJ)-South Korea's foreign exchange reserves fell \$118 million in March from the previous month to \$4.258 billion. But this was up \$1.06 billion from a year earlier, the Finance Ministry reports. The second consecutive monthly decline was attributed largely to repayment of short-term foreign loans.

natural rubber and copper.

U.S. Adopts New Goals For Stategic Stockpiles

WASHINGTON, April 7 (AP-DJ)—The Carter administration has adopted new goals for stock-piling strategic commodities that require large acquisitions and in some cases, disposals," Fred Bergsten, Assistant Treasury

Secretary said today.
"It will take several years to fulfill these goals," Mr. Bergsten said while speaking at an American Mining Congress conference in Phoenix. "Thus, the requests for approvals of acquisitions and disposals which have been transmitted to Congress for fiscal year 1978 through 1980 are only a

For example, tin disposals are now scheduled for no more than 45,000 tons, though 167,000 tons of tin now in the stockpile are considered surplus. Similarly, legislative authority is currently pending for the purchase of up to 225,000 tons of copper, far below the goal of 1,299,000 tons," he said. The administration is also supporting the principle of using proceeds from sales of surplus materials to purchase deficit materials," he said.

Commodity Agreements

"We are willing to hold these funds in a separate account for about two years. However, we op-pose holding such proceeds indefmitely in escrow to fund future purchases. Such a procedure would violate accepted budget practice by tying up idle funds" for several years, he said.

Mr. Bergsten also outlined the administration's views on international commodity agreements. He said that "only a handful" of such agreements now seem feasible.

Robert Tuck jr. PEOPLE

IN BUSINESS

Detroit Diesel Allison, a divi-sion of General Motors, has named Robert Tuck jr. as manager of European operations with headquarters in Rotterdam. He was formerly based in Michigan.

Peder Bonde, formerly deputy chief executive of the Skandinaviska Enskilda Banken and the Salen shipping group was ap-pointed president of the Banque Scandinave en Suisse. He is re-placing Didrik Hamilton who is retiring Thomas Goossens, previously vice-president of Deltec Banking Corp. in Nassau, was ap-pointed senior vice-president.

Swiss Banker

Convicted

For Fraud

BASEL, April 7 (AP)—A Swiss banker was sentenced

today to three years in prison

for fraudulently manipulating

"numbered accounts" of for-eign clients. Arthur Krieg, 54-

year-old former Basel-branch

manager of the Amexco Bank

convicted after a six-week trial

held largely behind closed doors to protect the clients'

anonymity, was found guilt of

embezzlement, forgery and

criminal mismanagement that

lost the bank 6.5 million francs (about \$3.8 million).

A key figure at the trial, ac-

cording to court sources, was

an internationally known for-

eign-exchange dealer who spe-

cializes in transactions for cus-

tomers in East Europe. Judges

referred to him as "Monsieur

Krieg denied the embezzle-

ment charge but admitted he

engaged in risky operations aiming to recover losses his cli-

ents suffered because of un-

successful speculation. The prosecution charged that

Krieg kept about I million

francs for himself. His lawyer

portrayed the defendant as an

ambitious banker who had been under "performance pressure" by his U.S. bosses and resorted to illegal dealings

to hide his mability.

Agent X."

NEW YORK, April 7 (AP-DJ)—A long legal battle between the Navy and General Dynamics over contracts totaling \$1.8 billion to build 18 nuclear submarines is making Pentagon officials increasingly concerned about the long-term impact on other de-

These worries surfaced recently when General Dynamics—after three years of unsuccessful attempts to renegotiate terms of the money-losing contracts-announced a decision to stop work. on the boats at its electric boat division on April 12.

Defense Department officials Commercial buying dominated say the cost overruns and delays in wheat and soyoil, the latter also in the program were a factor in say the cost overruns and delays attracting support from commis- the administration's recent decision to scale down the Navy's Earlier rumors influencing the long-range shipbuilding plan. In market mention China and the addition, they concede that prob-Soviet Union as potential buyers lems with the submarines are conof U.S soybeans and corn. The tributing to delays in the deploy-outside markets were higher. ment of trident ballistic-missile submarines, which are also being built by General Dynamics.

Some Pentagon officials also quarter was 4.2 percent. The rate worry that severe losses by Gener-al Dynamics on its submarine declined slightly to 4.9 percent new cruise missile.

sure that the company, which re-cently reported record 1977 earn-

Car Workers Reject Leyland Bonus Plan

LONDON, April 7 (AP-DJ)— Workers at the car division of British Leyland have rejected by a 2-to1 margin a scheme for productivity bonuses of up to £8 a

Leyland had offered the plan in a bid to increase lagging output following a company finding that productivity in the division is only 45-to-65 percent of that achieved by other major European car makers "For other products, such as tungsten and jute," Mr. Bergsten said, "we're extremely dubious" an car makers.

The Value Line provides **OBJECTIVE EVALUATIONS** of **AMERICAN STOCKS**

The Value Line Investment Survey continually reports on more than 1700 American stocks. It provides a vast amount of statistical history and forecasts, all of which are reduced by Value Line's computer-based programs to two simple, easy-toapply indices: (1) The rank for Timeliness (Relative Price Performance of the stock in the Next 12 Months) and (2) the rating for Safety (Price Stability of the stock plus finencial strength of the company).

An introductory subscription to The Value Line Survey brings you as a BONUS Value Line's 2400-page Investors Reference Service, with the latest full-page reports, rankings, and ratings on over 1700 stocks, together with the 64-page guide, "Investing in Common Stocks," Then, every week for 12 weeks, you will receive new reports on about 130 stocks, which update and replace the corresponding reports in your Reference Service-for just \$45, about half the regular rate, providing you have not had a subscription in the past two years. Send payment along with name and address together with this ad to Dept. 613 MO 2

THE VALUE LINE 5 East 44th Street, New York, N.Y. 10017, U.S.A.

Payment in local currencies (British £28, French ir 230, Swiss ir 120, DM 120) and requests for information should be directed to: Value Line. Att.: A. de Saint Phalle, 2 Ave. de Villers, 75007 Paris. (Tel. 551.63.59).

FINANCIAL NEWS AND NOTES

VW to Boost Dividend, Raise Capital

Volkswagen plans to increase its dividend and raise 900 million Deutsche marks in new capital through a 3-for-1 new share offering. The shares, having a nominal value of 50 DM, will be sold for 150 DM. This will raise the company's nominal capital 300 million DM to 1.2 billion DM. The automaker plans to increase its dividend to 7 DM per share from 5 DM paid in 1976 and also pay a bonus dividend of 1 DM. The capital increase is the first since 1970. The company did not give any indication of profit or turnover for the year. In 1976, it reported a net profit of 1.004 billion DM on group turnover of 21.42 billion DM. VW gave no details of how it would use the capital increase, although it has previously reported that it plans to boost investment spending in the next four years to 4.9 billion DM from 2.3 billion DM originally

Airco Agrees to Takeover by BOC

BOC International Ltd., ending its bitter takeover dispute with Airco, plans to make a \$50-a-share tender offer for all of Airco's outstanding common stock. The offer will be made "at the earliest practicable date" and has the approval of

the Airco board which rejected a similarly-priced offer from Martin-Marietta, Marietta acquiesced, saying it has no intention to enter a bidding contest. An insurgent majority of the Airco board had attempted to arrange a merger with Martin-Marietta to block BOC, which already owns 54 percent of Airco. BOC acquired 1.8 million Airco shares, at \$43 each, through a tender offer in January. Those who tendered their holdings at that time are to receive a further payment of \$7 per share from BOC upon the completion of the cur-rent tender offer. BOC and Airco, both makers of industrial gases, have agreed to drop various law

Toshiba, Rank Organisation to Link

Tokyo Shibaura Electric, maker of Toshiba appliances, plans to extend capital and technical assistance to the Rank Organisation of Britain. A spokesman for the Japanese concern says negotiations for the deal started last autumn when Rank Radio International Co. sought Toshiba assist-ance for the production of color television sets. Rank is a major movie, optical and electronic-instrument maker which holds about a 10-percent share in the U.K. color-television-set market.

Pentagon Fears Wide Impact

General Dynamics Feud Worries U.S. The Navy is under great presdespite the submarine-contracts

The dispute over the submarine

Litton Industries.

credit policy.

projections.

U.S. Money Growth

Below Expectations

NEW YORK, April 7

(Reuters)—U.S. money-supply growth during the latest week continued to fall behind expecta-

tions, leading analysts to reassess

expectations of an imminent

tightening in the government's

For the week ended March 29,

the Federal Reserve reported a

rowly-defined money supply.

about \$1-billion less than many

Even with the latest increase,

the M-1 growth rate in the first

the Fed's interim target levels,

Last year General Dynamics come to \$103.4 million, or \$9.51 a share. The company has not paid a dividend since 1970. One reason is that it has spent about \$400 million of its own money on the submarine program. The company has indicated it would be in-

clined to resume paying a divi-dend if the contract problems could be resolved. contracts is part of a broader conflict between the government and shipbuilders. The Navy is processing \$2.7 billion of contract claims, filed by its major shipbuilders—General Dynamics, Newport News Shipbuilding & Dry Dock, a unit of Tenneco, and

Yesterday, however, the Navy announced it would pay General Dynamics \$66.5 million as part of provisional settlement of cost overrun claims. The Navy also said review of cost overruns claims was continuing.

In response to the Navy's announcement, General Dynamics said it would wait until June 12 before halting the submarine work. Meanwhile, delivery of the 16 submariness still to be built is running up to 3½ years behind schedule.

work could jeopardize the company's ability to perform on other important defense contracts, including the Airforce's F-16 fighter only about 2.4-percent above the program and development of the

General Dynamics officials asings, is in good financial health and are below the longer-range growth objective of 4-to-6.5 per-

White House Press Secretary January average rate on an annualized basis, and 3.2-percent above the February level. Both these rates should be well within

Last year General Dynamics namics because it is paying a had a 4-percent increase in net inproblems. The Navy says General Dynamics, to help cut losses on the submarines, diverted man-power from the important pro-gram for trident strategic-missile submarines. As a result, the tridents are running up to 18 months behind schedule, and the first boat is expected to cost \$1.2 billion, 50-percent more than

sure to settle with General Dy-

Jobless Rate Up To 6.2% in U.S. WASHINGTON, April 7 (AP-

DJ)— The U.S. unemployment rate rose to a seasonally adjusted 6.2 percent in March from 6.1 percent in February, the Labor Department said today. The increase was the first since

August, when unemployment climbed to 7 percent. Higher unemployment among black women and black teenagers was the main reason for the March rise. Despite the increase, the department said the total unemployment picture was "little changed"

March rise was due to "rounding up the numbers." For the first quarter, the unemployment rate averaged 6.2 percent, compared with 6.6 percent in last year's the fourth quarter

last month. A spokesman said the

and 7.4 percent a year earlier. A breakdown by race shows that the job picture for whites was unchanged with an average unemployment rate of 5.3 percent. Black unemployment rose from 11.8 to 12.4 percent with all the deterioration among women and

Jody Powell said that "we clearly are disappointed with the rise in black unemployment" and added that the administration will continue to "pursue a policy of dealing with inflation and unemploy-

In Quarter, Official Says U.S. Rebound Seen Later This Year WASHINGTON, April 7 (AP-

Growth Flat

DJ)—The U.S.gross national product was flat in the first quarter of 1978 while labor costs were rising, but there will be a rebound in the second quarter, Carter Administration officials forecast

The first-quarter GNP in constant dollars probably was little changed from the previous quar-Courtenay Slater, the Commerce Department's chief economist said today.

She said her preliminary judgement on first quarter growth-even considering the bad weather and coal strike—is that it "would have fallen short of the 4-to-5 percent annual rate which we would like to have seen."

Mrs. Slater, speaking before the Joint Economic Committee of Congress, said her comments reflect her own judgment based on the limited data that is available. First-quarter performance "obsiously is disappointing but our ex-pectations continue to be for strong growth of GNP during the remainder of the year."

Rapid Growth Needed

She said it must be rememhered "however, that extremely rapid growth in the remaining quarters of 1978 would be necessary in order for earlier growth forecasts for the year as a whole to be fully met."

Labor Statistics Commissioner Julius Shiskin said the economy is doing well, but he sees continued reduced productivity looming as an obstacle to expansion. Mr. Shiskin told the committee

that last year, productivity grew 2.6 percent, down from 4.2 per-cent in 1976. He said this helped boost growth in unit labor costs to 6.1 percent from 4.7 percent. He said it appears there will be a "decline in productivity for this year's first quarter with an attendant increase in unit labor costs." But continued employment force "increases indicate that employers are gearing up for an expected economic rebound that is Likely in the second quarter."

Mrs. Slater told the panel that she also expects the economy to bounce back during the second quarter, noting available prelimi nary data indicates consumption expenditures for goods were weak in January and February following an abnormally strong fourth

She said despite a surge in March, unit sales "of automobiles for the first quarter fell below last year's fourth quarter." She said business fixed investment expenditures in the first quarter were held down by lower business automobile purchases and by reduced construction activity. She added that bad weather caused a "reduction in first-quarter residential construction while real disposable income probably was essentially unchanged."

senior executives \$30-\$80000+

If you are a top executive and you are thinking about reorientating your career, the decision to "put yourself on the market" is often a serious one. It can mean diverting much time and effort from your present job, which can also be endangered. And it means sitting on the less comfortable side of the interviewing desk.

One way is to do the round of the Executive Search Consultants. But you would much rather that they were looking for you. Another is to answer the "executive opportunity" advertisements. But you know that most of the jobs that would interest you are not advertised. And anyhow, there is a risk involved. Now, there is another way. You can subscribe, in full security, to the International Executive Search Newsletter.

\$ 30,000 or equivalent and upwards

Throughout the year, an average of more than 300 executive opportunities with salaries of between \$30,000 and \$80,000 or equivalent are listed. None of these are published elsewhere. The information is supplied to us, at no charge to them, by reputable Executive Search Consultants all over Europe.

If any of these opportunities interest you, you simply write to us. We then inform The advantages of this method are obvious. Security is total, just as in direct dealings with a professional Consultant. Until a serious opportunity occurs, the only time and effort required is reading through the newsletter at home. And when the right opportunity does come, it is the Consultant who contacts you.

Even if your present career is reasonably satisfactory, it does no harm to keep in touch with possibilities and remunerations outside. Just send us the amount of the subscription (10 issues) with your personal visiting card.

Subscription rates: Belgium - BF 1960; Canada - \$C 70; France - FF 190; Netherlands - FI L15; Sweden - Kr 280; Switzerland - SF 134; United Kingdom - £ 32; U.S.A. - \$65; West Germany - DM 128; other countries - FF 280 or \$60.



I.C.A. 3, rue d'Hauteville 75010 Paris - France Tel. (1) 824.63.45 Publishers of the International Executive Search Newsletter

Page 10 NYSE Nationwide Trading 3 p.m. Prices April 7 PoterPt 1 Petris III Petris III 20 Petros III 20 Pittos II 20 1622.57代 46 1625年25年55 323年7 21年42年67 5425年67 107141线。2019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月15日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月日,1019年3月 \(\text{\text{101}}\text{\text{\text{101}}}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tint{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\ti}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\ 384+ ½ 134+ ½ 134+ ½ 284+ ¼ 284+ ¼ 834+ ¼ 834+ ¼ 1854+ ¼ 1854+ ¼ 1854+ ¼ 1574+ ¼ 1574+ ¼ 1574+ ¼ 1774+ ¼ 1374- ¼ 1874- ¼ 1774+ ¼ 1774+ ¼ 1874- ¼ 1874- ¼ 1774- ¼ OKC 1.20 Oorkind .50 OaklifeP 1.12 OcciPef 1.25 OcciPef wt OcciP pf2.16 OcciP pf2.50 OcciP pf2.50 OcciP pf2.12 Opden 1.40 Ohld ed 1.76 34. Ask a lot (An international call means business.) Long Distance is the next best thing to being there. TENDER NOTICE

REPUBLIC OF TUNISIA

Ministry of Industry, Mining and Energy AGENCE FONCIERE INDUSTRIELLE 5, rue Robespierre, TUNIS Tel.: 288.133. Telex: 12554 AFIN.

INTERNATIONAL TENDER NOTICE

The "Agence Fonciere Industrielle," an industrial and business oriented public company, is launching an international call for bids on the work on allotment n° 3 - curtain wall - in connection with the building of the future headquarters of the Agence de Promotion des Investissements and the Agence Fonciere Industrielle, on avenue Mohamed V in Tunis.

The work particular to this allotment includes manufacturing, transporting, supplying, installing and testing the modular elements in aluminum and glass assembled onto the reinforced concrete structure of the building.

Specialized companies qualified for and interested in this project are required to go into partnership with the Tunisian company of their choice for the work that can be done locally.

The technical and tender files can be withdrawn as of April 15, 1978 at the headquarters of the Agence Fonciere Industrielle, 5, rue Robespierre in Tunis. A security deposit of 1000 DT (one thousand Tunisian dinars) will be required. This deposit will be immediately returned to all firms whose tender offer is not accepted.

Upon publication of this notice, interested firms are requested to submit their application to the Board Chairman of the Agence Fonciere by letter, to which should be attached a copy of the certificate of qualification and a list of referenc-

Additional information regarding this tender notice can be obtained from: La Direction des Etudes, Unite de Programmation et Conception, Agence Fonciere Industrielle, 6, rue Imam Rassaa, Tunis. Tel.: 287.386.

Selected Over-the-Counter

23%+ ½
19%
10%
20 — %
22%+ ¼
124+ ¼
22%+ ¼
50%+ ½
124 + 1¾
32%
23%+ ¼
25% — ½
11 4 ½
25% — ½
11 11 4 ½
25%+ ¾

NEW YORK (AP)— The following list is a selected National Secu-rities Dealers Assn. over the counter Bank, insurance & industrial Closing Prices, April 7, 1978 2 9 8274 84 42 11 11 11 18 7 36 64 19 22 3 24 44 3 15 14 18 18 14 14 14 15 16 16 17 17 20 16 16 17 17 20 16 16 17 17 20 16 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 17 16 1978 | Petithon | Petithon | Predavit | Pred | Crowfd | Crowfd | CrowsCo | Carliffed | CassCo | Carliffed | Carlif

signor 13: simprec 20 simm 1,12 simm 1,12 simpret 50 singer 40 singer 40 singer 40 singer 40 singer 40 single 10 smitha 1 smitha 1 smitha 1 smitha 1,22 smitha 1,25 sonctor 1,85 sonctor 1,85 south of 1,80 south **U.S. Commodity Prices** prices in primary markets as regis-0.38 METALS 275.00 214.76 74-75 0.33 64% 5.386 0.29 5.218 179.45 240.00 270,19 76-77 0.31 74% 4.7131 0.37 4.675 148.70 Open 808 bu) 3.2012 3.2114 3.2214 3.2214 3.2214 8 bu) 2.60 2.5714 2.5316 2.5316 4.57 6.57 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 2.63% 2.57% 2.56 2.56% 2.63% 2.60 2.57 2.52¼ 2.54 2.60 2.64¼ **NEW YORK FUTURES** 6.26 % 6.33 6.37 cents per la 160.00 155.00 155.00 150.25 151.25 148.40 146.00 144.25 141.50 138.80 136.35 136.35 156.50 151.95 149,00 143.50 139.45 136.80 +4.20 +4.10 +3.90 +4.20 +2.50 +1.80 +1.00 522.00 523.00 534.50 534.50 557.50 557.50 575.80 584.00 593.50 Dec 603.00 604.50 602.00 602.00 Feb 613.50 614.00 610.50 610.50 612.50 Apr 623.00 622.00 619.00 619.00 Jum 623.50 627.50 627.50 627.50 627.50 LIVE BEEF CATTLE (64,800 lbs)
Apr 53.70 54.05 53.45 53.50
Jum 53.95 53.05 52.35 52.50
Oct 52.70 51.45 51.50 50.75
Dec 50.70 51.20 50.45 51.10
Dec 50.70 51.20 50.45 51.10
Apr 50.50 51.00 51.00 51.00
Apr 50.50 51.00 50.45 51.00
Jum 51.50 51.00 50.45 51.00
Apr 50.50 51.00 51.05 50.45 51.00
Apr 50.50 51.00 51.05 50.45 51.00
Apr 50.50 51.00 51.05 50.05 50.05
Jum 51.50 51.00 51.05 50.05 50.05
Apr 50.50 51.90 50.50 50.50 51.00
Apr 50.50 51.90 51.45 51.22 JUICE 15,000 lbs.; cents per lb.
117.90 118.75 118.655 117.75 +1.00
114.20 118.75 118.570 115.75 +1.15
113.30 114.85 112.80 114.440 +1.05
107.50 108.50 107.30 108.30 +0.50
97.50 97.80 97.00 97.50 98.85
97.10 88.85 97.30 +0.55
88.85 90.10 88.85 89.30 +0.55 7½ 7%+ ½
16 16 — ¼
229½ 23%
39 39½+ ¾
26 26½
26 26½
26 26½
40 40½+ ¾
11½ 1½ 46
7 7½ 1½ 1½ 1½
11¾ 1½ 1½
11¾ 1½ 1½
11¾ 1½ 1½
11¾ 1½
11¾ 1½ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½
11¾ 1½ Jun 51.5 51.90 51.45 51.82 + .67

Sales: April 4816; June 7972; Aug 3888; Oct 2890; Dec 1841; Jan 90; Feb 768; Apr 240; June 176.

Open Interest: April 10665; June 26679; Aug 15387; Oct 8441; Dec 10207; Jon 1555; Feb 6432; Apr 2597; June 845.

LIVE HOGS (28.808 lbs.)

Apr 47.35 47.70 47.92 47.52 + .35

Jun 52.90 52.90 51.75 52.15 + .18

Jul 52.47 52.57 51.85 52.65 + .30

Oct 47.45 47.85 47.45 47.50 + .25

Dec 45.55 48.60 48.15 48.45 + .28

Feb 46.60 46.75 46.20 46.27 - .08

Apr 43.70 44.75 44.20 46.27 - .08

Apr 43.70 44.75 44.90 44.80 - .15

Sales: April 1399; June 42.49; July 1662; Aug 978; Oct 231; Dec 285; Feb 48; April 25; June 54.

Open Interest: April 2816; June 9478; July 4870; Aug 2487; Oct 1572; Dec 1528; Feb 398; April 286; June 11.

SHELL EGGS (22,500 dec)

Apr 45.90 45.95 45.95 43.90 43.10 - .10

Jun 47.25 49.95 48.91 48.70 + .10

Jun 47.25 49.95 48.91 48.70 + .10

Jun 47.25 49.95 51.00 51.00 1.25

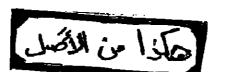
Sep 59.00 59.00 58.10 58.90 + 1.00 Sales: 600. **Market Summary NYSE Most Actives** April 7, 1978 Soles Close Ches.

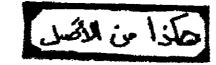
224,900 49½ +5%
361,200 26¾ +½
322,900 39 +4
275,100 6 +1
275,000 10½ +1%
274,100 22 + ½
274,100 8 + %
274,100 8 + %
274,100 10½ +1%
177,700 26½ + ¾
171,500 15½ + %
171,500 15½ + %
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½
171,500 15½ + ½ Airoo Inc McDermott Marsh Field CutlerHam ICN Pharm Vernade Inc Kennecott SCA Svc Exxon SearsRaeb Cant Oil Westgh El AethaLifeC Greyhound GenAmoil Sep 57.00 57.00 57.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50 Tedoy NYSE Close 25.16 846 521 463 1,830 27.36 598 598 440 1,857 Sales: Mary 3948; July 3186; Aug 549; Feb 152; March 2; July 2 Open Interest: May 4059; July 3795; Aug 1512; Feb 333; March 37; July 5. b—Bid: a—Asked; n—Nominal **IMM Futures** Dow Jones Averages Open High Low Close 764.12 772.00 760.83 769.58 + 207.25 209.19 206.08 206.02 + 105.45 106.33 105.07 105.95 + 268.15 270.75 266.94 269.70 + SWISS FRANC June 5435 Sept 5533 Dec 5415 Mar 5780 Sept GUILDER June Sept -19 -23 -15 N.C -20 Standard & Poors Low Close 89.39 90.17 98.29 99.17 51.48 \$2.06 10.66 10.74 12.72 12.85 June
Sept
Dec
YEN
June
Sept
Dec **NYSE** Index Close 50.41 51.81 39.85 39.60 52.99 Odd-Lot Trading in N.Y. STERLING *Shor! 815 1,544 1,492 4,017 1,121 85 flg-Sales 276,116 245,005 265,831 271,089 246,547 DEUTSCHE MARK
June A994 S009 A986 A987
Sorti S855 S055 S047A 5048A
Dec J120 S130 S100A S100A
Mor S145 J173 J148A S148A
June - J246N American Mosts Actives Sales Close Cb 124,000 5¼ + ¾ 108,500 2½ + 1¼ 104,900 9½ - ¼ 97,100 43¼ - 1¾ 84,000 37¼ + 1¾ 75,900 2¼ + 1 73,900 2¼ - ¾ 64,500 27¼ - 2½ 3,860,000 Closed

European Gold Markets April 7, 1978

UnBrond
UnBro pl
UEnRs 2.08
UFINCOI 30
UFINCOI 30
UNIGTY 1.12
UIILUM 2.54
UNIUM 2.55
UNI SwiBah 1.10
Swiff of 1.30
Swiff 1 of 1.30
Swiff 1 of 1.30
Swiff 1 of 1.30
Swiff 1 1.20
Swiff 1.20
Stelevi 2.20
Stelevi 2. VFCp 1.20 VSiCp .50 Voiley in .40 Varion .40 Varo .32 Vendo 1344444197041 1498 144444 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 149704 1497 TRE .64
TRW 1.80
TRW pr4.60
TRW pr4.50
TRW pr4.50
Tofferd 1
Tolicy of 1
Tolicy 18% - We PM6 + W 27% + W 27% + W 31 18% - W 30 18% - W 27% - W 27% - W 17% + W 27% - W **Montreal Stocks** UAL.80
UGI 1.48
UMC 1.20
UMC 1.20
UMC 1.20
UMC 1.20
UVInd 1
UARCO 1.40
UVInd 1
UARCO 1.40
UCamp 2
UCamp 2
UCamp 2
UCamp 2
UnCarb 2.80
UnCinc 1.34
Uncin 1.34 6 753 2214 8 25 21 17 276 10 341 2206 5 123 2006 7 5 2374 6 11 5494 8 139 1494 8 139 1494 14 45 896 18 175 6 9 121 1494 2100 49 11 2894 6 101 4494 10 160 4494 10 153 776 7 153 776 270 819 51198nk Mont 2000Boskc Res 405Carr Cern 100Conron 120Cons Berth 400Dorn Bridge 5500Dom Text/ 3700PCA Int 300Inmasco 350Lour Fin 4000Moison A 300Ant Trst 2714Power Co 250Price Co 250Price Co 250Price Co 250Price Co 250Price Co 3000RoillandB 4285Royal Bnk 2845Royal Bnk

International Herald Tribune We've got news for you.





	:							
an Louis an S	**		IN		IBUNE, SATURDAY-SUNDAY, APRI	IL 8-9. 1978		Page 11
Ru Sign	AMEX Natio	onwide Tradi	ing 3 p.m. Pri	ces April 7	Stocks and Sts. 3 p.m. Prev Stocks and Div. in \$ P/E 100s. High Low Quot. Close Div. in \$ F	Sis. 2 p.m. Prev Stocks and Pre 100s. High Low Quat. Class Drv in S. P.	Chige Stocks of Stocks o	end 51s. 2 p.m. Pre Pre 100s. High Low Qual Cor
51-a 343-a 15- 64-a 152-a 15- 67-a 265-a 15- 77-a 265-a	Stocks and Sts. 3 p.m. Prev Olv. in \$ P/E 100s. High Low Quat. Clase	Stocks and Sts. 3 p.m. Pre Dtv.ins P/E 199s. High Law Quat. Class	Stocks and Sts. Ja.m. Pre- bit. in S P/E 188s. High Low Quat. Class	Chape Stocks and Sts. 3 p.m. Prev Div. in S P/E 199s. High Law Quat. Clase	MoulTec,14 8 3% 3% 3% 3% Pebbis 80 McCsiD 18 77 3% 3% 3% 3% PerrTu 24% Perrtu 24% Penrtu 44 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 28 1746 1756 1776 Schiller 7 8 5's 5's 5's Schröde 30 5 44 20's 1996 1976 is Schröde 30 5 2 1756 20's 1756 is Schwar 10	16 12 3'2 3% 3% 16 16 TorthCp 10 7 5'4 5% 5'4+ 14 TottPet- 13 34 3 3 3 TottPet-	.05e 81044 71, 9 9;2
70 17 18 18 18 18 18 18 18 18 18 18 18 18 18	AEPIST 180 71 21 8% 8% 8% 5% 1 10 AAR 34 7 77 9 814 9 + 16	80msin 40 8 22 %; % % 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	# Eroled 11 214 214 214 EsoRd S20 5 3 1124 1124 1124 1124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124	Hotel 1.54e 12 1 19% 19% 19% 1 16 Houseon 30 5 8 U 5% 5% 5% 5% Houcom 80 9 330 21% 21% 21% 1 16	MedianGp 4 40 2% 2% 2% + 19 PECP Aft MedianGp 7 2 11 10% 10% Pentron Pentron MedianG 40 9 14 16% 16 14 + 19 PeoBovs 16	5 4 12°2 12°0 12°0 12 °0 5 CARIO 14 8 4 2°0 7°0 5°0 5 CUTYR 8 79 13°0 14°1 13°0 5 CUTYR 7 11 29 38°2 29° + 10°0 5 CODOT	14 96 25 2496 2476 Total pf. 16 2 1834 1834 1834 1834 14 Total pf. 16 2 1834 1834 1834 1834 1834 17 Trectory.	rv 16 44 314 334 314+ ut 9 78u44 4 4 .10 8 22u5 5 5 +
25 M	AAV 32 8 7 - C4 -	CD1 42 876 576 576 48 676 676 676 676 676 676 676 676 676 67	E121.00 5 11/2 11/2 11/2 11/2 11/2 11/2 11/2 11	HowelC.40 7 10 10% 10% 10% 10%+ 30	MEACO 30 6 2 15-4 15 15 15 16 Permi 40	8 8 101s 15's 10's SecMig 5 42 16's 16's 16's is Seles 30 7 2's 24s 29s is Seles 30	10 3 1003 10'3 101,— 's TriSAA A 30 24 24 24 24— 's TriSCD.12 10 2 1036 1036— 108— 1s TriSCD.12 112 112 113 115 TuboAA	10 4 11 0 834 0 + 100 7 55 84 7 6 734— 1 8 21 814 846 834+ 530 854 416 5
14 30 15 15 15 15 15 15 15 15 15 15 15 15 15	AVX 32 19 34 20% 19% 20% % % AZL 35 14 496 404 415 % AZL 46 AZL 4	CRS 24 5 34 12'9 12'2 12'9 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		HuckAlf 20 8 17 8½ 8½ 8½ 8½ ½ HudsnGa 7 4 9½ 9 9½+ ½ HudBO 140 8 128 40½ 38% 40½+11;	Metpin 20 17 56 22/2 22% 23/2 4 1 Pledman 1 1 23% 2% 23/4 1 Pledman 1 1 23% 2% 2% 2% 2% Pion Ta 40	6 4 8% 8% 8% 8% % 5 5emich.20s 8 5 1% 1% 1% 5emich 23 1% 1% 1% 5500005 40e 4 3 6% 6% 5% 5000005.50e	75 750 746 612 775+ 78 TAINFF. 6 4 376 4 UAI 26 9 11 746 756 756— is UIP 29 7 4 634 634 634 632 UNA.10	53 to 10 10 10
75. 27 8 % 1 3 % 2 %	Action 6 10 4 4 4	Collipi250 7 11 11 11 Collipi250 7 23/2 23/2 23/2	Formula 8 5 2 2 2 4 4 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HuskyO1 7 254 27% 2649 27%+ 46 Hycel 24 93 7% 7% 7% 7% 18	Mickibry 16 4 27 5 47 5 + 16 PHDM 1.40 Midligis 12 4 10 107s 107s 107s + 17 Pittory 1.50 Millier H 8 62 1107s 53 97s + 17s Pient Dr. 4 1107s 110		4 21 4 2 446 472 UVInd w 333 3114 2936 3636— 1a Unimus 12 1 578 378 378+ 18 Unionim	17 363 206 214 2194 13 2 876 876 276 V 10 45 6 576 579
254 25	AdobeO.16 18 65 16% 16% 16% 16% 16% 16% 16%	ColiPic 120c 5 12 25% 25% 25% 25% 25% Compon 10 58 12% 12% 12% 12% 12% 12% 12% 12% 12% 12%	ForOne 12a 6 1 7% 7% 7% 7% 10% 16 14 16 16 16 16 16 16 16 16 16 16 16 16 16	6 ICAA 24e 10 7 8 % 8 8 's IFS Ind .12 6 1 3½ 3½ 3½ IAK 29 5 9 11 102 1026 ImpCh .25e 7 2 6% 6% 6%	MissniT 34 2 1% 2 PryCm 25c MoPCR1,72 5 12 41 40% 40%+ 12 Poterran MitchiE.12 9 41 32 134 314 18 Poterran	5 6u 6 5°s 0 + 15 Sizercin 20 7 2000 2014 2014 75 + 15 Sizercin 30 13 7% 7% 7% 10 10 5 Sizercin 30 16 18 14% 14% 14% 14 5 Sizerc 24	9 7 13'4 13'4 13'4 13'4 UnBrook 9 7 9'4 9 9'++ UnBrook 7 6 13'4 13'1 13'-4 UNBrook 10' 10' 10' 10' 10' 10' 10' 10' 10' 10'	of 45 3.32 1.16 1.18 a 11 4 1% 1% 1% 1% 2 5 2% 2% 2% 2%
136 36 364 136 1840 364 165 244 1856	Alphalir 17t 5 13 414 416 414 Alphalir 18e 9 1 314 314 314 116	CdMerc 22 7 124 15-16 6/84 15-16 CdnMerr 9 10 1178 1114 1795+ 7 CdnSupO 8 18 57 575 575-17	February 52 5 17 15 1674 1674 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	impOil.100 8 24 1746 1746 1754 12 inflightSv 49 134 144 134 146 146 instrSvs 19 78 1 15-16 15-16 instr Svs 15 6 936 936 936 1455 16	MonMg Al 5 3 6% 6% 6% 6% Prentte La Mood 400 7 11 14% 14% 14% Prentte La Prestey	4 6 5 5 5 5 Schron 10 7 22's 22's 22's 12's 4 5 Schron 22' 4 107 11's 11's 11's 15 Sourcism 40	4 13 12% 12% 12% 12% 13% 1 UMO1CP 1 USBCBT 1	ץ 25 אין אַרון אַרון 13 אין 25 אין 2
870 676 194 876 194 87	AllogA wtO 2 2% 2% 2% AligA pt3 1 30% 30% 30% + % AlidArt 56 2 2 2	Conchert 16 1 31-5 15-16-1-1 Coptished 20 7 to 4th 4th 4th 1 Corresso 13 4th 4th 4th 1 Cornest 120 9 150 254 25 254+1 Cornel 120 9 150 254 25 254+1	16 FinGnA 40b 3 18% 19% 19% 19% 19% 19% 19% 19% 19% 19% 19	Integral	Mortding 5 20 2 2 2 PrimMi ProCT 1.2% 12% 12% 12% 12% 12% 12% 12% 12% 12% 1	8 6416 15% 16 + % SCEDDTION 9 2 5% 5% 5% SCEDDTION 9-16 11% 11 11%+ % SCEDDTION 6 9 10% 16 12 SWF108A 40	4 1246 1246 1246 1246 3 1334 1334 135+ '4 USRdium' 10 264 26'6 26'6 14 USRDR! USRDR! USRDR!	m 5 3 3 3 3 7 1 14 1 13 13 11 + 5 74 74 74+
to ip set	Alfornii 10e 4 3 7½ 7½ 7½ AlfocCp 28 15-16 % %—1-16	CostleAM1 11 5 ISN 15% 15% 15% 1	** Fishman 33 i0 2 2 2 2 4	IntSeow 40 5 2 8 8 8 1817/2-246 1817/2-246 5 98 234 234 234 234 234 234 234 234 234 234	Nortics 24 12 28 18% 18% 18% 18% 19 19 Nichory 52 2% 2 2% 16 W Profile 24 Nichory 52 2% 2 2% 16 W Profile 34 Nichory 52 3% 55 55 56 36 PSCei pl425 Nichory 52 3% 50 3% 18% 18% 18% 18% 18% 18% 18% 18% 18% 18	14 31: 31: 31: 31: 54: 54: 55: 513 41: 41: 41: 54: 55: 51: 61: 61: 61: 61: 61: 61: 61: 61: 61: 6	10 1 15% 15% 15% 15% UnivCity 7 17 12% 12% 12% 12% 4 UnivRu 5 25 11% 10% 18% 4 Valley	32 B 17 15'∞ 15 15 −
30% 36% 36 18% Um. 36 12% Um.	Alter Pd .50 9 11 1994 1994 1994 Alter Pd .50 9 11 1994 1994 1994 Alcon pt .25 2100 4612 4672 4672 1 16	CelluCft 5 19 176 176 176 176 CentryF 14 22 474 474 474 CentryII 50 7 8 164 14 164 1	Li Clauffor A 16 Ch Ch Ch Li	InvDnA 1.28	NtSpirm 20 5 4 5/7 5% 5% 5% 4 5% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6%	5 38 10% 10½ 10½ 10½ 14 SpenFd 15 87 7% 7 7% 14 Statistic 30 39 13½ 12½ 12½+ 14 SidAlin 1	14 25 4/8 4 4 - 5 Vallmos. 9 39 10 93, 93, 18 Vallmos. 6 6 8 77, 75, 18 Vallson. 4 1 213, 213, 213, Vallest. 4 Vallson.	21 4 3 7 4% 6%-
7 10 12 12 12 12 12 12 12 12 12 12 12 12 12		Certron 31 34 34 32 1-1 Certec 08 11 5 39 39 39 39 Chocket 60 7 2 7% 7% 7% 7%	74 Fluide J. 72 11 30 274 274 274 274 274 274 274 274 274 274	1 iroa8 eff 3 u35% 35 35 +1% 4 irvinind 18 11 13 3% 3% 3% 4 u israelo 67e 3 6% 6% 6%	Nidrig 156 7 22 11/2 136 11/4 REDM	4 5 7-7 74: 71-2 15 51C0000 1.10 6 2 73-74 74 51CMett 23t 7 22 24 2'8 2'4 5tdProd wt 8 9 10'6 10'6 10'6 14 5tdStr 1.33t	12 14 9's 998 97 Veriff 20 17 15 12 Veriff 18 31's 304 31 + 14 Veriff 20 17 17 17 Veriff	7 7 1844 1834 1844 4 7 316 116 154 326 9 3 264 266 2689
78 1849 164 78 1849 164 78 1379 14	ABUSPIC 32 8 7 8 8 8 AntiCopCo 9 1 1/2 11/2 11/2 Accepted 34 10 7 932 9% 9% 1/4 1/4 Alstroad .71 7 378 11 9 81/2 81/4 1/4 Alstroad .71 7 3 2 378 11 81/2 81/2 81/4 1/4 AMEDA .44 5 1 81/2 81/2 81/2 81/2 1/4	Chartend 9 7 14 16 16 16 Campist 24 8 60 7% 7% 7% 7% 7% 1 174 6 16 16 17% 174 174 6 16 16 17% 174 174 174 174 174 174 174 174 174 174	% FoxSioP 50 8 53 8% 8 8°s + °v % Francis 40 8 109 u16 14% 15% + °c	Jochyn 40b 10 5 64n 6 6 1000bs 40 7 8 1914 1016 1014 141 1412 1412 1412 1412 1412 1412	NYTIM 70 10 819 022 21% 23 +14s RSC 10 NewbE 485 4 85 9% d 8% 842 4 Rogen 10e	8 13 2% 210 210 48 Storne 18 12 9 7% 7% 7% 140+ 's Storned 12 6 16'7 16'2 16'4 36 274 28'6 28'6 28'0+ 's Storned 36 7 8 22% 28'7 28'6 5 Storned 36 5 Storned 36 5 Storned 36 5 Storned 36	4 14 3% 3'n 3'n Vertible 30 13c 13c 13c+'s Vertible 5 3 154c 155c 155c 's Violech	9 17 14 14 14 97 11 24 2 2 2 1 10 1 41 47 42
19 18 18 18 18 18 18 18 18 18 18 18 18 18	Amropolos 9 1½ 1½ 1½ 1½ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼ 1¼	Charisto 751 746 24 24 24 24 24 24 24 24 24 24 24 24 24	Friedm.286 5 2 5% 5% 5% 1% 1% 6% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Jefero 15e 5 9 3% 3% 3% 3% 4 John Pa 26 16 3 6% 6% 6% 6% Jupiper P 15 25 3% 3% 3% 3% 3% 3% 3% Jupiper 4 9 7 6% 6% 6% 1%	Notes: 81 25 372 374 374 16 Roths Ro	34 1 la 1 la 1 la 5fertE1 5 3ta 3ta 3ta 5tertE1 t.10 9 2 16 14 15 5tertent 14t	17 th 1 1 1 Virco 16 28 1 2's 2's 2's 2's 15 7 2 2's 2's 2's 2's Visual6 8 2 2 3 5 Voples 4	4 7 and 440 and 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
20 1040 174 20 1040 160 20 470 44 18 1850 184	ASCIE 30e 7 28 876 876 876 16 ASCIE 30e 326 1176 1674 1674 1674 1674 1674 1674 167	Colon Der 11 37 474 476 756 7 7 Colon Der 11 37 474 476 776 776 776 776 776 776 776 77	\(\begin{array}{cccccccccccccccccccccccccccccccccccc	KTelin 35 4 4½ 4½ 4½+ ½ Kdisin 18.30c 47 1% 1% 1% 1% 1% KuneMili wi 2 2½ 2% 2% KuneMili vi 9 2 4½ 4½ 4½ 1%	NuclDia	14 2 15 15 16 SueAnn 18e 8 3 12ts 125s 12ts 1 9 1 1975 1975 Summit 9 1 1975 1975 SunElec 80 34 22 23 25 27 Sunour 40s	7 2 3% 3% 3% 3% VulcCo.1 6 5 15 16 15-16 15-16 -1-16 Vulctor. 11 33 22% 29% 29% WTC 16	.50 4 2 8 3 2 7 2 mg rd
201 20 10 10 10 10 10 10 10 10 10 10 10 10 10	Amfec 200 4 6 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Connect 230 7 6 23% 23% 23% - 23% - Connect 230 7 6 23% 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23% - 23%	76 Gothiel A0 7 22 1214 1179 1214 14 76 Goldsty 50e 5 2 712 775 715+ 11 76 Gothiel A6 5 11 10 978 978 1 76 Gothiel A6 5 24 24 24 24 24 24 24 24 24 24 24 24 24	Korpokt 9 2 4% 4% 4% 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	Onkwd 12b 6 2 ft 11 11 11 ChArt 24c 7 1 816 816 816 816 416 416 12 Repull 52 ChBrus 2n 11 1 6746 6746 6746 4746 15 Repull 52 ReiGo wt ChSento 72 8 12% 12% 12% 12% 1 RemAr 1	7 1 93, 93, 93, 53, 53, 50, 63, 40 738 11-16 7-16 19+ 16 Supercr 15 7 6 17/6 1676 17 — 36 Supercr 25	21 237 34's 33 331+ 6 WUI's 8 1 14 14 14 12 Wochmil 4 2 3% 3% 3% 3% 10 WorderEd 6 70 11 10% 101- 6 WorderEd 9 9 92 94 94 14 WorderEd	2 7 2% 2% 2% 2% 19 39 13% 13% 12%
B E B B B B B B B B B B B B B B B B B B	ArrowE.10e 4 71 114 11 11	Compo 20 20 10 Sta Sta Sta - 12	Gornor 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	KineCorf 31 5 3% 3% 3% 3% 1 KineCorf 31 5 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3% 3%	Continues 20	6 15 4% 6% 6% 6% 500-00-00-00-00-00-00-00-00-00-00-00-00-	8 9 91a 91a 91a 11b 16 Worles 50 9 40 91a 91a 91a 1a Worles 50 12 1312 131a 131a 1a Worles 50 1 15-16 15-16 15-16 Worles 51 5 7 4:2 4:2 412 Worles 61	10 13 234 654 654 6355 10 15 34 14 7530 78 14 13 74 1336 7376 7374
1 121 121 27 12 12 25 15 25 25 25 25 25 25 25 25 25 25 25 25 25	Arundel 7 4 10% 10% 10% 10% 10% 4 10 10% 10% 10% 10% 10% 10% 10% 10% 10%	Computor 5 5 1% 1% 1% 1% 16 16 16 16 16 16 16 16 16 16 16 16 16	Genge 45 12 314 314 314 Gentsco 93 0 23 24 23 24 23 44 23 44 45 45 45 45 45 45 45 45 45 45 45 45	LaBarge 36 13 17 2% 2% 2%	OSultivo A0 5 13th 13th 13th 15 RestAssc Outin 50 20 7 22 654 664 664 54 OversSec 5 37a 37a 7a 7a Oxer IA 10e 4 130 45e 47e 47e PFInd 53 79 2 3 3 1-16 Rischon 40 130 140 140 PFInd 53 79 2 3 3 1-16 Rischon 40 130 140 140 Rischon 40 140 140 140 Rischon 40 140 Rischon 40 140 140 Rischon 40 Rischon 40 140 Rischon 40 140 Rischon 40 140 Rischon 40	Stu 6 59 6 + 2 System 50 5 25 6/6 50 6/8 5 System 57 4 28 7 6/6 6/8 5 System 57 5 System 57	11 699 2617 26 2446+ 56 WornColl 8 200/2315 2236 2315+ 14 WorhColl 22 21 1296 1275 1296 WithHead 6 20 176 176 176 WRIT18	# 05 55 4'm 4% 4% 4'% 7 .10 14 6 2% 2% 2% 2% # 66 9 2 34'7 34'7 34'2
A NA NA	Atolisto.15e 4 6 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Consider 277 1 23 994 944 914 Construction 5 16 499 494 494 494 ConstRef 48 18 49 9 9 9 9 Consider 8 49 19 9 9 9 19 19 19 19 19 19 19 19 19 19	Glontf 1.20 5 1 1974 1974 1974 Gray of 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	LGMoor 20 5 2 4½ 4½ 4½ 4½ LGPm 30 7 13 4% 4% 4% 4% LGPm 11 47 29% 20% 20% 4 LGVRd 14 5% 5% 5% LotyRd 14 5% 5% 5%	Downta-10e 130 43e 41 41e Richton 40	9 11% 11% 11% 10 Totals in at 108 37 13% 12% 11 + 10 Totals in at 108 37 13% 12% 11 + 10 Totals in at 108 37 13% 12% 11 + 10 Totals in at 108 37 13% 12% 11% 11% 11% 11% 11% 11% 11% 11% 11	2 4% 4% 5%+ to Wolsco 2 6 1 9% 9% 9% 9% (Wellso 3 25 407 3% 3 3 4 Wellso 9 15 21 3% 3% 3% 1% WescoF/	30 10 2 5 5 5 5 5 15 15 14 15 2 4 16 2 4 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17
20 28		Cookin 57 14½ 14% 14% 14% 1 Cookin 30e 12 3 13½ 13 13½ 13 Coop.Jr. 30e 9 4 4 4 4	GlenGer.16 17 1 644 654 654 454 554 454 554 554 555 555	LokeSh 24 11 24/23-14/23-14 LoTourB 9 10 194 136 136 LeeRo.60 7 2 13 13 13 LeePh 25 55 4/9 4/4 4/4 4/4 14	PGEstrE 1.23 25 14/8 14 14 19 Rescot PGEstrE 1.23 2 14/8 14 14 19 Rescot PGEstrE 1.23 4 26 25% 25% Restrict PGEstrE 2.24 26 25% 25% Restrict Rusco PGEstrE 2.24 26 25% 25% 25% 25% 25% 25% 25% 25% 25% 25%	3 3 3 3 3 3 3 4 4 7 7 6 7 7 6 7 7 6 7 7 6 7 7 7 6 7 7 7 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4 29 3"4 31a 31b Welchey 4 17 5"5 5 5 32a 1a Welchey 155 5 220"a 191; 201a 4 9a Wellen 5 7 9 87a 87a 1a Wellen	25a 4 44 u12% 12% 12%+ / 20 1 6% 4% 6%+
Vi 13ta 13ta 134a 13a 15 29 37 . 26 26 26	AutoTrn 4 256 276 276 276 AutoTrn 6 820 776 578 77 + 14 AVEANC 30 6 63 578 574 574 17 Avendi 1.20 6 3 2746 2746 2746 474 Avendi 1.20 6 3 2746 2746 1478 1474 1478 1478 1478 1478 1478 1478	Corel.b.48 10 7 23 25 23 — 46 Coreno 80 10 2 1314 13 13 Corellus 48 9 3 151/2 151/4 151/4 1/4 Costolius 58 44 44 47/4 1/4 CottCo wt 12 5-16 5-16 5-16	Glosser AD 5 5 1272 1776 1274 1 786 1274 1 786 1375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1 375 1	LehighP 130 12 18% 10% 10% 10% 16% 16 16 16 16 16 16 16 16 16 16 16 16 16	PCE-1000 1 2/2 20/2 20/2 49 NOW 1-40	6 30 1412 141s 1614 36 Tettles 53 1616: 40 234 235 236 16 Ferma 38c Tenna 38	12 8 2706 2752 2744 1 www.mineson 12 8 210 210 1204 16 Wichitto 1 250 250 274 17 Wichitto 1 250 250 250 10 Wichitto 10 10 416 416 416 16 William 3	12 90 u 5% 5% 5%+ 40% a 107 u 10% + 9% 10%+
178 15 14 51 15 14 51 14 15 15 15 15 15 15 15 15 15 15 15 15 15	BTU 7 15 3% 3% 3% 1% 18 800er 50 6 16 12% 12% 12% 12% 4 801dor 32 19 4 29% 29% 29% 4 9%+ %	Cromer 5 4 4 4	Gdrich wt 24 2 17% 17% 17% 16% 56 17% 17% 18% 18% 18% 18% 18% 18% 18% 18% 18% 18	Levitrin 30 7 8 1036 1036 1036 1036 1036 1036 1036 1036	PGERF 23 13 234 23 24 5 5 6 5 6 c PGERF 1.70 2 7 23% 23% 23% 3 6 5 6 5 6 6 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2	1 16/2 16/5 16/3 Terrodyn 15 20 21/5 21 21 - ts Terrodyn 7 41 16/6 14/5 14/5 - ts Terrod 30 7 42 28 28 - ts Terrod 40	13 35 2019 20 20 - 4 Winkim 7 14 919 914 914 Woodind 12 2 15 1494 143- 4 WorcalC 9 9 1036 1316 1036+ 15 WikWood	.40 5 11 790 214 794 4 4 510 + 4 510 + 4 510 + 1610 1610 1610
24 % 261 La 13% 302 22% 23%	Barlow S. 320 1 67h 67h 67h 47h 4 16 Barlos W S 17h 17h 17h 17h 18h 18h Barlos A 32 9 9 87h 9 W B Barlo C 12 28 7 3/h 3 3/h 4	Crystic 36 21 32 14% 14% 14% 14% 14% 14 Crystic 50 11 x3 27% 27½ 27½ 4 Cubic 5 8 36 18% 18% 18% Curticu 1 5 8 17½ 17% 17%	6 GMCCH 40 6 8 114 11 11 - 14 6 Grange A 9 12 114 119 1194 14 6 GMmInd 4 37 714 7 7 + 14 6 GBosin P 18 141 614 634 636 - 14	LORMO	PacPLot 5 z125 \$5% d55% 55% 55% 1/4 SanJW 1.40 PallCo 44 14 29 33% 23 33% + 1/4 Sandgte 20	22 2 1572 1502 1512 Thorotor 11 2 19 10 19 19 Tariffm 20e 4 10 5% 5 Set 4 7 31 44 43 20 Tiffonyl 20	2 314 315 314 Wrighth A 4 11 14th 14th 14th 14th 14th 14th 14th	44 8 36019 1614 1814+
17 20 20 20 20 20 20 20 20 20 20 20 20 20	BorryR.16 7 19 9½ 9½ 11% 11% 1½ 18 11% 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-0-0-	GILECT AU 11 19 374 37 37 + 14 Greenma 7 11 24 24 24 4 4 Greenma 7 11 24 24 14 14 14 14 14 14 14 14 14 14 14 14 14	Lynnwedr 34 10 1½ 1¾ 1¾ 1¾ ½	Porsons 1 4 15 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 31% 3	5 8 10 975 975 in Tokhelm 1 12 22 776 772 772 Toled si4.25 6 1 1376 1376 1376 15	7 42 2312 2313 2312+12 Xonics 225 47 47 47 + 12 ZeroCo / 9 1 71a 71a 71a+1a Zimmer	23 256 74a 75a 40 8 21 14'a 14'a 14'a+ -24 8 16 12'8 12'7 12'8-
36 174- 12- 51 9 - 40 24-0 24-	BenStMowf 11 34 34 34+174	Day And 200 19 44 1094 1095 1096+ Va	h GourdC.60 8 1 13% 13% 13% 13% 14% 4 h Guilford.60 4 60 14% 13% 14% 4 h 6 Gifford.10 4 6 1 25 25 25 6 GuiffRep.25 4 24 9% 9 9 9% 4 % GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 9% 9 9 9% 4 % 5 GuiffRep.25 4 24 % 5 GuiffRep.25 4 24 % 5 GuiffRep.25 4 25 % 5 GuiffRep.25 4 24 % 5 GuiffRep.25 4 6 GuiffRep.25 4 24 % 5 GuiffRep.25 4 6 GuiffRep.25 4 6 Guiff	MDC 2 1 1 1 MPO 5 3 4½ 4½ 4½ 4½ 4½ 4½ 4½ 4½ 4½ 4½ 4½ 4½ 4½				
50 275 27: 394 354 36 3157 31	Berrigo 1 1% 1% 1% 1%	Dentol 40r 16 157 21% 21% 21% 16 15 10% 10% 10% 10% 10% 10% 10% 10% 10% 10%	Guistrim 19 64 876 876 764 72 -H-H- 6 Holisa 80 5 2 1374 1372 1375 16 6 Holisa 80 5 7 1274 1372 1375 17	MonrC.40 10 16 64 64 64 64 4 Morindo 61 34 34 34 MorFin 7 16 1714 1714 1714				
15 6 15 39 4 22 27	Berveri 38 214 2% 214 1/6 Berlinch 1 314 314 314 1/6 Berveriy 17 42 474 474 474 BicPen.48 8 7 8% 8% 8% 8% 1/6 1/6	Distant 43 57 476 419 474 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 HonSqRt 221 3 456 456 656 HonTsQLdUPe 15 42 856 856 856 856 856 HartzML40 7 14 1056 10 10 + 16 Harvey 10 32 256 216 214 Honsbro 20 5 35 576 576 576 576	Mortene 4 1 934 934 934 4 4 4 4 4 4 4 4 4 4 4 4 4 4				
\$4 74 7m 10 33-10 39m 10 936 5m	BinkAfib 7 5 17% 17% 17% 18 BinkAfib 7 5 17% 17% 17% 17% 18 Binkey 88 8 22 17% 17 — \$ 18 Binkafi 46 5 4 9% 9% 9% 9% 18 18	Document 10 246 12% 11% 12%+ ½ Doment 6 355 u59% 58 59%+13% Doment 80 8 1 14% 14% 14% 14% DrexUt144 1 18% 18% 18%	6 MOSSING AND 6 3 9 9 9 - 16 6 Howela.15e 10 1 4 4 4	MortPr 40 7 5 25% 25% 25% 25% 4 Masind 400 6 40 14% 137% 14 Masters 10 476 474 474				
17 817 8: 36 174 17 12 84 84 16 3416 10.	BodinAp 40 2 4% 4% 4% 4% 18 18 18 18 18 18 18 18 18 18 18 18 18	Drivitian 10 8 796 8 + 36 Dumiop 24e 161 11-16 156 156—1716 Dumiop 24e 161 11-16 1576 1596—15 Dumion 24e 15 18 18 18 19 934 934—14 18 18 18 18 18 18 18 18 18 18 18 18 18	HealthCh 12 14 64% 672 64% 46 46 672 64% 46 46 47 46 47 47 47 47 47 47 47 47 47 47 47 47 47	London Metals Market (Plaures in sterling per metric ton) (Silver in pence per troy ounce)				
17 17 17 17 17 17 17 17 17 17 17 17 17 1	Bowne 360 6 38 1314 1276 1314 74 Brodfol N.20 9 60 816 734 8 + 36 8 Bronch 20 5 14 414 414 414 8	EAC.10e 6 1 5 5 5 EarthRes 1 6 33 15% 15% 15% 15% 1.5% 1.5%	Hofman JSe 3 15 5% 5% 5% 5% 4. HollyCp 8 13 6% 6% 6% 6% 14 HomeOA 90 8 206 37% 27% 27% 37%+ 36	April 7,1978 Today Previous Bid Asked Bid Asked Copper wire bors:	DIT VAL	D MANEY WILLD	DE TUE NEWO 10	•
→ 20°s 2Fs .'s 18°s H - 's 30% 2Fs 78 78 -	Brascan Ia 3 4) 14% 14 14% 1 8 Brasin E 1.20 8 5 26 26 36 36 BristBr 50 8 22 11% 10% 11% BroDari 20 6 3 4% 4% 4%	Edmos 8 134 134 134 EDO Ad 8 17 1334 1334 Ehren 10 48 73a 77a 77a 4 ElcorCo 16 9 x25 915 914 914 195 Elbose 8 10 7 7 7 9 14	Hormel 1.36 5 1 22¼ 22¼ 23¼ HospAt 60 25 7 10% 10% 10%	Spo! 699 689,5 700 708.5	PREE YESEI			
		ElcorCp.16 9 x25 9½ 9¼ 9½+ ½ ElHosse 8 10 7 7 7 ± ½	Eurogumengy	3 months 7135 714 7155 716 Cuthodes: stol 690 691 690 691 3 months 7045 7055 7655 706	101100	R MONEY WHER	TE THE MEMOR).
's 11% lier % 7'4 74 % 13% UT % 20 75°	BrodySe 11 2% 2 2% 1/8 8 8 8 8 9 12 21% 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1	Elfode 8 10 7 7 7 ½ 16 Electrop 1 6 1 15% 15% 15% Electrop 2 6 1 15% 15% 15% Electrop 32 9 25 15 15 ½ 1% Electrop 32 9 25 15 15 ½ 1%	Eurocurrency Interest Rates	3 menths 713.5 714 715.5 716 Cathodes: sool 690 691 690 691 3 menths 704.5 705.5 705.5 705 Tin: soot 5.790 5.765 5.775	101100	v manci mucu	ine memo k).
76 1346 1377 20 20 2647 17 1654 1577 54 2840 2847 30 574 577 12 78 18	Buildex 5 1 5% 5% 5% 5% 5 8 8 8 8 8 8 8 8 8 8 8 8 8	ElcorCo.16 9 x25 9½ 9¼ 9½ ½ ½ Elhose 8 10 7 7 7 ½ ½ Elactrop 1 11 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates	3 months 713.5 714 715.5 716 Cathodes: sool 690 691 690 691 3 months 704.5 705.5 705.5 706 Tin: soot 5,790 5,800 5,765 5,775 3 months 5,840 5,850 5,805 5,810 Lead: soot 309 306.5 311 312 3 months 314.5 315.5 316.5 317 Zinc: spot 301.5 304 306 306.33 3 months 309 309.5 311.5 312 3 months 309 309.5 312 3 months 309 309 309 309 309 309 309 309 309 309	101100	v mone i mueu	ine mewo k).
7s 134s 137 2s 20 284 17 164s 172 3s 264s 264 3s 5u 5r	Burdess 5 1 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	ElFose 8 10 7 7 7 1 1/2 Elacido 11 2 5% 516 5% 5/6 Electros 1 6 1 15% 15% 15% 15 1/2 Electros 2 9 25 15 15 15 1/2 Electros 1 11/2 1/4 1/4 1/4 1/4 1/2 Electros 9 10 1278 27 27% 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4	Interest Rates Doller D.Mark 1 M. 74-74 3-34 2 M. 74-74 3-34 3 M. 74-74 3-34 6 M. 74-78 34-34 1 Y. 715/16-81/16 34-34 Switss Franc Sterling	3 months 713.5 714 715.5 716 Cathodes: sool 690 691 690 691 3 months 704.5 705.5 705.5 706 Tin: spot 5,790 5,800 5,765 5,775 3 months 5,840 5,850 5,805 5,810 Lead: soot 309 306.5 311 312 3 months 314.5 315.5 315.5 317 Zinc: spot 203.5 304 306 306,30 3 months 309 309.5 311.5 312 Silver: spot 207.0 279.2 280.4 280.6 3 months 283.9 284.1 285.6 London Commodities		v monei mueu	ine mewo k).
79 1349 1374 30 10 20 20 20 20 20 20 20 20 20 20 20 20 20	Burtine 1.10 6 3 12% 12% 12% 14 16	Elfoste 8 10 7 7 7 1 1/2 Electros 1 2 5% 516 5% 15% 15% 15% 15% 15% 15% 15% 15% 15%	Interest Rates Doller D.Mark 1 M. 74-74 3-34 2 M. 74-74 3-34 3 M. 74-74 3-34 6 M. 74-78 34-34 1 Y. 715/16-81/16 34-34 Switss Franc Sterling	3 months 713.5 714 715.5 716 Cathodes: spot 690 691 690 691 3 months 704.5 705.5 705.5 705 Tin: spot 5,790 5,890 5,785 5,775 3 months 5,840 5,850 5,850 5,810 Lead: spot 309 306.5 311 312 3 months 314.5 315.5 316.5 317 2 inc.: spot 301.5 304 306 306,30 3 months 309 309.5 311.5 312 Silver: spot 279.0 279.2 280.4 286.6 3 months 283.9 284.1 285.4 285.6).
79 1349 137- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 30 138- 3	Stock Indexes	Elfosse 8 10 7 7 7 1 1/2 Elfautd 11 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates Dollar Do-Mark 1 M. 7%-7% 3-3% 2 M. 7%-7% 3-3% 3 M. 7%-7% 3-3% 6 M. 7%-7% 3-3% 1 Y. 715/16-81/16 3%-3% Swries Franc Sterling 1 M. 5/16-7/16 6%-7% 2 M. 5/16-7/16 7-7% 3 M. 3%-2% 5 6 M. 5%-12 7%-3% 1 Y. 1-13/16 8%-9	3 months 713.5 714 715.5 716 Cathodes: sool 690 691 690 691 3 months 704.5 705.5 705.5 704 Tin: spot 5,790 5,890 5,785 5,775 3 months 5,840 5,850 5,810 Lead: spot 309 305.5 311 312 3 months 314.5 315.5 314.5 317 2 inc: spot 300.5 304 306 306.39 3 months 309 309.5 311.5 312 Silver: spot 279.0 279.2 280.4 280.4 3 months 283.9 284.1 285.4 285.6 London Commodities (Figures in sterling per metric ton) April 7, 1978 High Low Close Previous SUGAR May 104.25 102.50 103.40 103.59 103.60 Aug 107.65 167.70 107.90 108.25 108.40		ternational Herald We've got news for y	d Tribune	5.
130 UP 13	Burdess 5 1 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Elfoste 8 10 7 7 7 1 1/2 Electros 1 2 5% 516 5% 516 Electros 2 9 25 15 15 15 15 15 16 Electras 1 1 13% 13% 15% 15% 15% 15% 15% 15% 15% 15% 15% 15	Interest Rates Doller D.M. D.M. D.M. D.M. D.M. D.M. D.M. D.M	3 months 713.5 714 715.5 716 Cathodes: sool 690 691 690 691 3 months 704.5 705.5 705.5 704 This spot 5,790 5,800 5,785 5,775 3 months 5,840 5,850 5,805 5,810 Lead: soot 309 309.5 311 312 3 months 314.5 315.5 315.5 317 21nc: spot 301.5 304 306.3 3 months 309.5 314.5 317 21nc: spot 301.5 304 306.3 3 months 309 309.5 311.5 312 3 months 309 309.5 311.5 312 3 months 309 309.5 311.5 312 3 months 209 309.5 314.5 312 3 months 209 309.5 314.5 314.5 3 months 209 309.5 314.5 3 months 209 209.2 200.4 200.4 3 months 209.9 209.2 200.4 3 months 209.9 209.2 200.4 4 months 209.9 209.2 200.4 5 months 209.9 209.2 200.4 5 months 209.9 209.2 200.4 6 months 209.9 209.4 209.4 7 months 209.9 209.4 209.4 8 months 209.9 209.4 209.4 9 months 209.4 209.4 209.4 9 months 209.9 209.4 9 months 209.9 209.4 209.4 9 months 209.9 209.4		ternational Heralo	d Tribune	
134 UP- 14 20 UP- 17 20 UP- 17 20 UP- 17 20 UP- 17 20 UP- 18 27 UP- 18 17 UP	Buildex 5 I 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Elfosse 8 10 7 7 7 1 1/2 Elfacito 11 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates Doller D-Mark 1 M. 7%-7% 3-3% 2 M. 7%-7% 3-3% 3 M. 7%-7% 3-3% 6 M. 7%-7% 3-3% 6 M. 7%-7% 3-3% 6 M. 7%-7% 3-3% 7 1 Y. 715/16-81/16 3%-3% Franc Sterling 1 M. 5/16-7/16 6%-7% 2 M. 5/16-7/16 6%-7% 3 M. 48-12 7%-8 6 M. 48-14 7%-5% 1 Y. 1-13/16 8%-9 European Markets (Yesterdays closing prices in local currencies) Amsterdam Gi Un St 2.88 Guinness 1.73	3 months 713.5 714 715.5 716 Cathodes: stool 690 691 690 691 3 months 704.5 705.5 705.5 704 This spot 5,790 5,800 5,765 5,775 3 months 5,840 5,820 5,805 5,810 Lead: stool 309 306.5 311 312 3 months 314.5 315.5 315.5 317 2 linc: spot 201.5 304 306.30 3 months 309 309.5 311.5 312 3 months 309 309.5 311.5 312 3 months 209 279.2 280.4 280.4 3 months 283.9 284.1 285.4 285.4 London Commodities (Figures in sterling per metric ton) April 7, 1778 High Law Close Previous (Bid-Assind) (Close) SUGAR Mary 104.25 102.50 103.40 103.58 103.60 Aug 109.06 107.45 107.70 107.90 108.25 108.40 Oct 112.25 110.55 110.00 111.59 111.65 Mary 124.00 123.50 123.50 124.00 127.59 124.25 Aug N.T. N.T. 127.50 128.00 127.59 124.26 COCOA Mary 1,975 1,970 1,985 1,975 1,980 Aug 1,975 1,970 1,985 1,975 1,980 Aug 1,975 1,970 1,982 1,945 1,975 1,980 Aug 1,975 1,970 1,982 1,975 1,970 Aug 1,975 1,970 1,982 1,975 1,970		ternational Heralo	d Tribune	
134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 134 13	Burdex 5 I 54 54 54 54 54 54 54 54 54 54 54 54 54	Elfosse 8 10 7 7 7 1 1/2 Elacino 1 1 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates Doller D-Mark 1 M. 7%-7% 3-3% 2 M. 7%-7% 3-3% 3 M. 7%-7% 3-3% 6 M. 7%-7% 3-3% 6 M. 7%-7% 3-3% 6 M. 7%-7% 3-3% 7 1 Y. 715/16-81/16 3%-3% Franc Sterling 1 M. 5/16-7/16 6%-7% 2 M. 5/16-7/16 6%-7% 3 M. 48-12 7%-8 6 M. 48-14 7%-5% 1 Y. 1-13/16 8%-9 European Markets (Yesterdays closing prices in local currencies) Amsterdam Gi Un St 2.88 Guinness 1.73	3 months 713.5 714 715.5 716 Cathodes: stool 690 691 690 691 3 months 704.5 705.5 705.5 704 This spot 5,790 5,800 5,765 5,775 3 months 5,840 5,820 5,805 5,810 Lead: stool 309 306.5 311 312 3 months 314.5 315.5 315.5 317 2 linc: spot 201.5 304 306.30 3 months 309 309.5 311.5 312 3 months 309 309.5 311.5 312 3 months 209 279.2 280.4 280.4 3 months 283.9 284.1 285.4 285.4 London Commodities (Figures in sterling per metric ton) April 7, 1778 High Law Close Previous (Bid-Assind) (Close) SUGAR Mary 104.25 102.50 103.40 103.58 103.60 Aug 109.06 107.45 107.70 107.90 108.25 108.40 Oct 112.25 110.55 110.00 111.59 111.65 Mary 124.00 123.50 123.50 124.00 127.59 124.25 Aug N.T. N.T. 127.50 128.00 127.59 124.26 COCOA Mary 1,975 1,970 1,985 1,975 1,980 Aug 1,975 1,970 1,985 1,975 1,980 Aug 1,975 1,970 1,982 1,945 1,975 1,980 Aug 1,975 1,970 1,982 1,975 1,970 Aug 1,975 1,970 1,982 1,975 1,970		ternational Heralo	d Tribune	
The Designation of the Designati	Stock Indexes 1 5/4 5/4 5/4 5/4 5/4 5/4 5/4 5/4 5/4 5/4	Elfausdo 8 10 7 7 7 1 1/2 Electror 1 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates	3 menths 713.5 714 715.5 716 Cathodes: sool 690 691 690 691 3 months 704.5 705.5 705.5 706 This spot 5,790 5,800 5,785 5,775 3 months 5,840 5,850 5,805 5,810 Lead: sool 309 306.5 311 312 3 months 314.5 315.5 316.5 317 Zinc: spot 301.5 304 306 306.35 3 menths 309 309.5 311.5 312 Zinc: spot 301.5 304 306 306.35 3 menths 309 309.5 311.5 312 Zinc: spot 279.0 279.2 270.2 280.4 380.6 3 menths 283.9 284.1 285.4 285.6 London Commodities (Figures in sterling per metric ton) Aperil 7, 1978 High Low Close Previous (Bid-Astand) Close) SUGAR May 104.25 102.50 103.40 103.50 103.40 Aug 109.00 107.65 107.70 107.90 108.25 108.40 Oct 112.25 110.55 110.05 111.50 111.55 Dec 115.00 112.50 114.95 114.95 114.95 Aug N.T. N.T. 127.50 128.00 127.95 128.00 Jy 1.940 1.875, 1.774 1.915 1.875 1.890 Jy 1.940 1.875, 1.774 1.915 1.877 1.879 Sep 1.885 1.890 1.885, 1.894 1.889 1.890 Aug 1.745 1.750 1.750 1.770 1.775 Aug 1.716 1.705 1.750 1.770 1.775 Aug 1.716 1.705 1.706 1.775 1.770 Aug 1.745 1.751 1.750 1.770 1.775 Aug 1.745 1.751 1.751 1.770 1.775 Aug 1.745 1.751 1.751 1.770 1.775 Aug 1.745 1.751 1.751 1.770 1.775 Aug 1.745 1.750 1.750 1.770 1.775 Aug 1.770 1.775 Aug 1.770 1.770 1.775 Aug 1.770 1.770 1.775 Aug 1.770 1.775 Aug 1.770 1.770 1.775 Aug 1.770 1.770 Aug 1.770 1.775 Aug 1.770		ternational Heralo	d Tribune).
日本の	Burdex 5 54 54 54 54 54 54 54 54 54 54 54 54 54	Elfastd	Interest Rates	3 menths 713.5 714 715.5 716 Cathodes: sool 690 691 690 691 3 months 704.5 705.5 705.5 706 This spot 5,790 5,800 5,785 5,775 3 months 5,840 5,850 5,805 5,810 Lead: sool 309 306.5 311 312 3 months 314.5 315.5 316.5 317 Zinc: spot 301.5 304 306 306.35 3 menths 309 309.5 311.5 312 Zinc: spot 301.5 304 306 306.35 3 menths 309 309.5 311.5 312 Zinc: spot 279.0 279.2 270.2 280.4 380.6 3 menths 283.9 284.1 285.4 285.6 London Commodities (Figures in sterling per metric ton) Aperil 7, 1978 High Low Close Previous (Bid-Astand) Close) SUGAR May 104.25 102.50 103.40 103.50 103.40 Aug 109.00 107.65 107.70 107.90 108.25 108.40 Oct 112.25 110.55 110.05 111.50 111.55 Dec 115.00 112.50 114.95 114.95 114.95 Aug N.T. N.T. 127.50 128.00 127.95 128.00 Jy 1.940 1.875, 1.774 1.915 1.875 1.890 Jy 1.940 1.875, 1.774 1.915 1.877 1.879 Sep 1.885 1.890 1.885, 1.894 1.889 1.890 Aug 1.745 1.750 1.750 1.770 1.775 Aug 1.716 1.705 1.750 1.770 1.775 Aug 1.716 1.705 1.706 1.775 1.770 Aug 1.745 1.751 1.750 1.770 1.775 Aug 1.745 1.751 1.751 1.770 1.775 Aug 1.745 1.751 1.751 1.770 1.775 Aug 1.745 1.751 1.751 1.770 1.775 Aug 1.745 1.750 1.750 1.770 1.775 Aug 1.770 1.775 Aug 1.770 1.770 1.775 Aug 1.770 1.770 1.775 Aug 1.770 1.775 Aug 1.770 1.770 1.775 Aug 1.770 1.770 Aug 1.770 1.775 Aug 1.770	In	ternational Heralo	d Tribune).
日本の Table 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Stock Indexes 1 5/4 5/4 5/4 5/4 5/4 5/4 5/4 5/4 5/4 5/4	Elfausdo II 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates Dollar	3 months	CLASS	ternational Herald We've got news for y	d Tribune).
の の の の の の の の の の の の の の	Stock Indexes 2 7/2 21/2 21/2 21/2 21/2 21/2 21/2 21/	Elfausdo II 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates Dollar D-Mark 1 M. 7%-7% 3-3% 3-3% 3 M. 7%-7% 3-3% 3-3% 3 M. 7%-7% 3 M. 5/16-81/16 6 M. 7%-7%-7% 7-7% 8 M. 5/16-7/16 7-7% 3 M. 5/16-7/16 7-7% 5 M. 5/16-7/16 7-7% 7-7% 7-7% 5 M. 5/16-7/16 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7-7% 7	3 menths	CLASS	ternational Herald We've got news for y	d Tribune	
日本では、	Stock Indexes 1 5/4 5/4 5/4 5/4 5/4 12/5 12/5 12/5 12/5 12/5 12/5 12/5 12/5	Elfoste 8 10 7 7 7 1 1/8 Electros 1 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates Dollar D-Mark 1 M. 7%-74 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2	3 menths	CLASS (CLASS	ternational Herald We've got news for y SIFIED ADVER' Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAY, Short bein left for	TISEMENTS Ek Page) REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE WORDS : Deciroom operiment for morth of July operingly located in Paris Rev 2867	SITUATIONS WANTED BEGIAN, 30, working 10 years og
は 20 mm	Stock Indexes 1 5/4 5/4 5/4 5/4 5/4 12/5 12/5 12/5 12/5 12/5 12/5 12/5 12/5	Elfoste 8 10 7 7 7 1 1/8 Electros 1 2 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Interest Rates Dollar D-Mark 1 M. 7%-74 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2	3 menths	CLASS (CLASS	ternational Herald We've got news for y SIFIED ADVER Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LANGE BLAT. Short term. Left Boot Tel: 325.08.91 BANTIE BASSY: superb 42 sq.m stadio, phone and, coin, fro. 1750. Tel: 500.21.28.	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worst of busy controlly located on Paris Bon 386', Bril. 103 Kangaway, London WC2.	SITUATIONS WANTED BEGIAN, 30, WORKING 10 YEARS OF INVESTMENT ADVISER
は の の の の の の の の の の の の の	Stock Indexes 2	Elfoste	Interest Rates Dollar D-Mark 1 M. 7%-74 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2 3-31/2	3 menths	CLASS (CLASS	ternational Herald We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED Lange RAY, Short term Left Bord 174, Amster 174, Amster 174, Amster 174, Amster 175, 194758. 18 April - 15 September Charmen smal house, large reception, 7 shorts, process, of	TISEMENTS Ek Page) REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE woosh : bed- room operiment for morth of July centrolly located on Prova Bed 3867, HT. IIId Kengawoy, London WC2. SERVICES TO SERVICES TO SERVICES TO SERVICES TO SERVICES TO SERVICES	SITUATIONS WANTED BEIGIAN, 30, WOTING 10 YOU'S OR INVESTMENT ADVISER
19	Stock Indexes 1.5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5	Elfaued	Interest Rates Dollar D-Mark 1 M. 7%-74 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3	3 menths	CLASS (CLASS	TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAT. Short term. Left Boot 164-325.08.91 PASSY: superb 42 sq.m studio, phone sun, coim. Frs. 1750. Tei. 500.21.28. 174, Amster-794958. 185. Aprill - 15 September Charman studi house, large receptor, ? ber corns., cil. comforts, phone. Fr cor	TISEMENTS Ek Page) REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE woosh : bed- room operiment for morth of July centrolly located on Prova Bed 3867, HT. IIId Kengawoy, London WC2. SERVICES TO SERVICES TO SERVICES TO SERVICES TO SERVICES TO SERVICES	SITUATIONS WANTED BEGIAN, 30, working 10 years of INVESTMENT ADVISER
は の の の の の の の の の の の の の	Stock Indexes 2 1/2 21/2 21/2 21/2 21/2 21/2 21/2 2	Elfaued	Interest Rates Dollar D-Mark 1 M. 7%-74 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3-3½ 3	3 menths	REAL ESTATE FOR SALE U.S.A COING TO NEW YORK? Green wich, Connecteut, is near, has better schools, lower texas. Contact its for free informations Royance Roll State, 15 West Patham Ave., Greenwich, Conn. 06870 U.S.A Tel. 2023 869-4160. VISA Tel. 202	TE REAL ESTATE FOR SALE PARIS AREA FURNISHED Lakee RAT. Short term. Left Bond 174, Amster. 174, Amster. 174, Amster. 174, Amster. 174, Amster. 175, Amster. 176 optical. 186, 200, 187, 1720. Tri. 500,2128. 186, 200, 187, 1870. Tri. 500,2128. 186, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187,	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE work : beg- room opertment for month of July centrolly located in Pork Bon 3867, HT. ILIS Kingswoy, London WC2. SERVICES The structure and decorating for your home away from home, affect hose No charge for only of the following services: plans, delivery to shop or plans, delivery to	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mt) recited commodify investments) leeks afrective powing objects. French or English speaking area. Willing to learn additional languages. Ready to occupt unhanted work load if retinureradies is accordance. Please contact JAJ Int I Tracing and Frience, c. o Koude Kaukerstract 23, Box 9, 8 8200 Brugge, Belgem, Telex 81827
は の の の の の の の の の の の の の	Stock Indexes 1	Elfaued	Interest Rates	3 menths	REAL ESTATE FOR SALE U.S.A. GOING TO NEW YORK? Green wich, Conneched, is noter, has better schools, lower testes. Contout us for free informations, and on the cut us for free informations, conn. 06870 U.S.A. Tel. 2031 869-4160. PERMONT HOMES for sale. Our firm handles all of the loveliest properties in the uneque commently, small pour pour pour formation, and the cut of t	TE REAL ESTATE FOR SALE PARIS AREA FURNISHED Lakee RAT. Short term. Left Bond 174, Amster. 174, Amster. 174, Amster. 174, Amster. 174, Amster. 175, Amster. 176 optical. 186, 200, 187, 1720. Tri. 500,2128. 186, 200, 187, 1870. Tri. 500,2128. 186, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187, 200, 187,	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE work : beg- room opertment for month of July centrolly located in Pork Bon 3867, HT. ILIS Kingswoy, London WC2. SERVICES The structure and decorating for your home away from home, affect hose No charge for only of the following services: plans, delivery to shop or plans, delivery to	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mil real entitle and commodify investments) leeks affractive powing object and commodify investments) leeks affractive powing object and commodify investments and commodify investments and commodify the commodify and commodify and commodify and commodifications. However, the commodification of the commodification
の の の の の の の の の の の の の の	Stock Indexes 2	Elfaued	Interest Rates	3 menths	REAL ESTATE FOR SALE U.S.A. GOING TO NEW YORK? Green wich, Connechear, is near, has before schools, lower texts. Contoct us for free information: Raynor Real Estate, 15 West Patham Ave. Greenwich, Conn. 06870 USA. 16t 2023 869-4160. USA. BOLLAND BOLL	We've got news for y We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LANGE RAY, Short term. Left Bont 174, Amster- 174, Amster- 174, Amster- 1794958. SANTE 174, Amster- 175 Agail - 15 September Charmen small house, large reception, 2 ber serious, and confronts, phone. Fr 175 Agail - 15 September Charmen small house, large reception, 2 ber scoms, and comfronts, phone. Fr 175 Agail - 15 September Charmen small house, large reception, 2 ber 174, Amster- 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail - 15 September Charmen small house, large reception, 2 ber 175 Agail 175 Agail - 15 September Charmen small house, large reception, 2 ber 176 Agail 176 Agail 177 Agail 177 Agail 178 Agail 179 Aga	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE work : beg- room opertment for month of July centrolly located in Pork Bon 3867, HT. ILIS Kingswoy, London WC2. SERVICES The body from home, office tool No charge for only of the following SERVICES ETHAN ALLEN INT'L Furniture and decorating by your home away from home, office tool No charge for only of the following services: plans, delivery to step or other, office tool No charge for only of the following services: plans, delivery to step or other, office tool No charge for only of the following services: plans, delivery to step or other, office tool No charge for only of the following services: glans, delivery to step or other, office tool No charge for only of the following services: glans, delivery to step or other, office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only of the following services: glans, delivery to step or other office tool No charge for only office	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mt) recited commodify investments) leeks afrective powing objects. French or English speaking area. Willing to learn additional languages. Ready to occupt unhanted work load if retinureradies is accordance. Please contact JAJ Int I Tracing and Frience, c. o Koude Kaukerstract 23, Box 9, 8 8200 Brugge, Belgem, Telex 81827
10 10 10 10 10 10 10 1	Stock Indexes 2	Elfaued	Interest Rates	3 menths	REAL ESTATE FOR SALE U.S.A. BOING TO NEW YORK? Green with Connecture, is near, hes buffler schools, lower texas. Context is not free informations Reynor Real Estate, 15 West Putnern landles oil of the lovelest properties in the uneque commentity, small population, yet known as a recreational, educational, cultural and grastronams at carder in our lovely Stota. Ask for our free action, CALAND BEES AND ASSOC, BALTOS, Box 627 Manchester, Vermont 03254, 802, 362, 1838. REAL ESTATE TO LET/SHARE AUSTRIA VIENNA'S HOUSING AGENCY Tel. 27 95 44, HOUSING AGENCY Tel. 27 79 79 79 79 79 79 79 79 79 79 79 79 79	TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE FLAT. Short sem. Left Bon 174, Amster- 175, Amster- 175, April - 15 September Charmen small house, large receptor, ? ber sender	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worsts; become oper through located in Poris. Box 3867, left, 103 Kingswoy, London WC?. SERVICES ETHAN ALLEN INT'L Furniture and decorating by your home, owfor point, and the following services: plans, delivery to shop or point, and apport documents. NITERESTED Send for our 397, page guide. Ethan Allen, 71 Sith Ave., N.Y.C. 10003. M. Redecorating & Carpeting of Redecorating & Carpeting &	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mt) recited commodify investments) leeks afrective powing objects. French or English speaking area. Willing to learn additional languages. Ready to occupt unhanted work load if retinureradies is accordance. Please contact JAJ Int I Tracing and Frience, c. o Koude Kaukerstract 23, Box 9, 8 8200 Brugge, Belgem, Telex 81827
19 19 19 19 19 19 19 1	Stock Indexes 2 % 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2%	Elfaued	Interest Rates Dellar De	3 menths	REAL ESTATE FOR SALE U.S.A. GOING TO NEW YORK? Green wich, Connecticut, is near, has better schools, lower texts. Connor Real Estate, 15 West Present Proceedings of the Connecticut, of	We've got news for y We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE FLAT. Short term. Left Bori Tel. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. PARIS AREA FURNISHED LARGE FLAT. Short term. Left Bori Tel. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. 164. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. 165. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. Samplina AL CC off Pass 637 5446 o 637 4010 pm. 161H EXELMANS: by private, lovel 3 rooms, April Sept., or longer 155 NET. 527 88 34 COSTA SMERALDA, SARDINIA AL CC OSTA SMERALDA, SARDINIA COSTA SMERALDA, SARDINIA COSTA SMERALDA, SARDINIA AL COSTA SMERALDA, SARDINIA	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worsts; become operiment for morth of subcontrol of the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the p	BEGIAN, 30, working 10 years as INVESTMENT ADVISER frit I real easile and commodity investment) seeks attractive powing orea. Willing to learn tackfloard languages. Ready to account instruments work tood if restrumentation is in accordance. Please contact J.M.J. Int I Tracing and Finance, c. o Koude Kaukenstract 23, Box 9, 8 8200 Brugge, Belgem, Teles Belger, Teleschard, easily and the service of the development projects. Accurate to the programment, design project and to imprend own business or confidential and the service of the development projects. Accurate to imprend own business of the confidency and development projects. Accurate to imprend own business of the confidency of the service of the servi
は の の の の の の の の の の の の の	Stock Indexes 2	Elfaued	Dollor	3 menths	REAL ESTATE FOR SALE U.S.A. GOING TO NEW YORK? Green wich, Connecticut, is near, has better schools, lower texts. Connor Real Estate, 15 West Present Proceedings of the Connecticut, of	We've got news for y We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE FLAT. Short term. Left Bori Tel. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. PARIS AREA FURNISHED LARGE FLAT. Short term. Left Bori Tel. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. 164. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. 165. 325.08.79 PASSY: superio 42 sq.m stacks. phone sun, colim. Fra. 1730. Tel. 500.21.28. Samplina AL CC off Pass 637 5446 o 637 4010 pm. 161H EXELMANS: by private, lovel 3 rooms, April Sept., or longer 155 NET. 527 88 34 COSTA SMERALDA, SARDINIA AL CC OSTA SMERALDA, SARDINIA COSTA SMERALDA, SARDINIA COSTA SMERALDA, SARDINIA AL COSTA SMERALDA, SARDINIA	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worsts; become operiment for morth of subcontrol of the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the following service; plans, delivery to step in the process of the p	BEGIAN, 30, working 10 years as INVESTMENT ADVISER first real earlier and commodity investments leeks attractive powing orea. Willing to harm tackthonal languages. Ready to accord where to the first in the first i
は の の の の の の の の の の の の の	Stock Indexes 1	Elfaudd	Interest Rates Dollar Do	Continues: spot	REAL ESTATE FOR SALE U.S.A GOING TO NEW YORK? Green wich, Connectuant, is near, heaptire schools, lower tous. Bother schools, for tour tous. FRENCH PROVINCES REAL ESTATE FOR SALE DUTCH HOUSING Content of the connectual content of the understance of the connectual content of the connectual connectual content of the connectual content of the connectual connect	We've got news for y We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAY, Short term Left Bont 174 Amster 1794958. SANTE 174 Amster 1794958. SANTE 174 Amster 1794958. SANTE 175 April - 15 September Charmen small house, large reception, 2 ber croms, all comforts, phone, fr 4000 reports, comports, phone, fr 4000 reports, comports, phone, fr 4000 reports, comforts, phone, for 3 recom, April Sept, or longer 355 NET. 527 88 34 COSTA SMERALDA, SARDAINIA COST	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worst : bedroom operiment for morth of July centrolly located on Poris. Ben 3867, Bril. 103 Kingsvoy, London WC2. AMERICAN EXECUTIVE worst : bedroom operiment for morth of July centrolly located on Poris. Ben 3867, Bril. 103 Kingsvoy, London WC2. SERVICES ETHAN ALLEN INT'L furnisher and decorating for your home away from home, office tool No charge for only of the following services: plans, delivery to ship or person, all export documents. Natural of apport documents, in the person of the following services: plans, delivery to ship or person, and apport documents. In the person of the following services: plans, delivery to ship or person, and apport documents. In the person of the following services: plans, delivery to ship or person. In the person of the	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mil red entitle ord commodify investments) leeks afractive powing order within the composition of the commodify investments as a cocondition. Fleate contact LAJ Int I Training and finance, c. o Koude Kaukenstrace 23, Box 9, 8 E200 Brugge, Belgem, Telex BIEZ? TOP EXECUTIVE consideration of the contact of the cont
は の の の の の の の の の の の の の	Stock Indexes 2 1/2 2/2 2/2 2/2 2/2 2/2 2/2 2/2 2/2 2	Elfacing 1 11 2 5th	Interest Rates	Transmis	REAL ESTATE FOR SALE U.S.A. GOING TO NEW YORK? Green wick, Connecticut, is near for some part of the form of the	TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAY, Short term Left Bont for critica: Bungsiow, it. Act. COSTA SMERALDA, SARDINIA AL COSTA SMERALDA, SARDINIA COSTA SMERALDA, SARDINIA AL COSTA SMERALDA, SARDINIA COSTA SMERALDA COSTA	TISEMENTS EK Page) REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE wors: become appartment for month of July centrolly located in Peris Bon 386/, Brt. 163 Kingswoy, London WC2. ETHAN ALLEN INT'L furniture and decorating to your home away from home, office tool No charge for city of the following services plans. delivery to stup or plane, and a sport documents. NIERSTED Send for our 372, page guide. Ethan Allen, 71 Sin Ave., N.Y.C. 10003. Redecorating & Carpeting BRITISH FIRM Paris. 9466224 DIVORCE IN 24 HOURS, Mutual or consistent for pure plane, and standard for pure plane, both pure plane, and standard for pure plane, both pure plane, and pure persons, both pure plane, and	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mt) received conditionally investments) leeks offractive powing observed, French or English speaking area. Willing to learn additional languages, Ready to accept unlamited work load if restore contact. J.A.J. Int'l Tracing and Frenth or Considering propositions is in accordance. Please contact. J.A.J. Int'l Tracing and Frenth or Considering propositions is in accordance. Please contact. J.A.J. Int'l Tracing and Frenth or Europe 8 8200 Brugge, Belgium, Telex 81827 TOP EXECUTIVE considering propositions and Frenth or Europe in consisting on the propositions and frenth of Europe in considering own beginners to smiler portions and the contact of the propositions of the frenth of the contact of the frenth of the first making own development of 38 Period Institute, 2 Principles of the Proposition of the Period Institute of the first making 5 years as downer of travers of growth polympic. Sales preferred electrical consisting certification. According to the first making certification. According to the first making certification. According to the proposition of the polympic of the polympic sales position of the polympic sales professed to state view overseas. Also held before the polympic sales position of the polympic sales p
は、 は、 は、 は、 は、 は、 は、 は、 は、 は、	Stock Indexes 27/2 27/2 27/2 27/2 27/2 27/2 27/2 27	Elfacing 1 11 2 7 7 7 7 1 16 Electron 2 1 1 15 15 15 15 15 16 Electron 3 2 9 25 15 15 15 15 15 16 Electron 1 2 9 10 1276 27 276 15 15 15 15 15 16 Electron 1 20 9 10 1276 27 276 16 16 Electron 1 20 9 10 1276 27 276 17 17 17 17 17 17 17 17 17 17 17 17 17	Interest Rates	Transmis	REAL ESTATE FOR SALE U.S.A. GOING TO NEW YORK? Green wich, Connecticut, is near, hose the shoots bowe towns. Control to five for the information Ray in the unit of the last	TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAY, Short term Left Bont for critica: Bungsiow, it. Act. COSTA SMERALDA, SARDINIA AL COSTA SMERALDA, SARDINIA COSTA SMERALDA, SARDINIA AL COSTA SMERALDA, SARDINIA COSTA SMERALDA COSTA	TISEMENTS EK Page) REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE wors: become appartment for month of July centrolly located in Peris Bon 386/, Brt. 163 Kingswoy, London WC2. ETHAN ALLEN INT'L furniture and decorating to your home away from home, office tool No charge for city of the following services plans. delivery to stup or plane, and a sport documents. NIERSTED Send for our 372, page guide. Ethan Allen, 71 Sin Ave., N.Y.C. 10003. Redecorating & Carpeting BRITISH FIRM Paris. 9466224 DIVORCE IN 24 HOURS, Mutual or consistent for pure plane, and standard for pure plane, both pure plane, and standard for pure plane, both pure plane, and pure persons, both pure plane, and	BEIGIAN, 30, working 10 years as INVESTMENT ADVISER ond controctive position order of the control of the contro
は、 は、 の は、 の は、 の の の の の の の の の の の の の	Stock Indexes 2 1/2 2/2 2/2 2/2 2/2 2/2 2/2 2/2 2/2 2	Elfoctors 1	Interest Rates	Samonths	REAL ESTATE FOR SALE U.S.A. BORNO TO NEW YORK? Green with Connector, is near, between schools, lower toxes. Contour to for free informations Raylor Research Comments, and the toxes of toxes of the t	We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LANGE RIAX. Short sem. Left Bont Tel. 225.08.91 PASSY: superior 42 sagm studio. phone son, coim, Fra. 1750. fei . 500.21.28. 174 Amster- 794958. 185 Agail - 15 Suptember Chormen sond house, large reception, 2 ber receism, oil controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls, and controls, phone. Fr ACC Lange of the controls of the control of the controls of the control of	TISEMENTS EK Page) REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worth; become operiment for month of July centrely located on Pera Box 3867, HT. 103 Kingswoy, London WC.? SERVICES ETHAN ALLEN INT'L Furniture and decorating for your home away from home office tool No charge for only of the following services: plans, delivery to shop or plane, oil export documents. INTERSTEO? Send for our 392, page guide. Ethan Allen, 71 Sth Awe, N.Y.C. 10003. Redecorating & Carpeting all strings of the following for the following services: plans, delivery to shop or plane, oil export documents. INTERSTEO? Send for our 392, page guide. Ethan Allen, 71 Sth Awe, N.Y.C. 10003. Redecorating & Carpeting all strings of the following for the following for the following services. Plans, and for our 392, page guide. Ethan Allen, 71 Sth Awe, N.Y.C. 10003. AMERICAN EXECUTIVE worth; for the following services: plans, allowers for the following services. Plans, 10 schools, 10 strings for plans, 10 schools, 10 strings, 10	BELGIAN, 30, working 10 years as INVESTMENT ADVISER ond conveniently investment) leeks officially to compare unimmed work load if resturements is in occordence. Please contact is in occordence. Please of Finance, cord of the occordence occordence of the occordence of the occordence of the occordence occordence occordence occorde
は、 の の の の の の の の の の の の の	Stock Indexes 2	Elfoardo 11 2 54 54 54 54 54 54 54 54 54 54 54 54 54	Interest Rates	Samonths	REAL ESTATE FOR SALE CLASS REAL ESTATE FOR SALE CORNO TO NEW YORK? Green wich, Connected, is over toost. Connected, to receive the control of the lowless of the lowless properties in this unspen commany, sortile properties of first properties of the lowless properties in this unspen commany, sortile properties of first properties of the lowless propertie	We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAX. Short term. Left Bort 12: 252 052 128 174 Anther- 794958. The control burgelows, 16 Controls, 16 Cont	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worth: bedroom apartment for month of July controlly located in Prof. Box 386, HT. 103 Kingsway, London WC2. SERVICES FIHAN ALLEN INT'L formative and decorating by syrucory plans, delivery in other profession of the following syrucory plans, delivery in other professions, and services plans, delivery in other plans, office tool No. charge for any of the following syrucory plans, delivery in other plans, office tool No. charge for any of the following syrucory plans, delivery in other plans, office tool No. charge for any of the following syrucory plans, delivery in other professions, in the second for our 372, page spirile. Either Allen, 71 Shr Ave., N.Y.C. 10003. MR. Redecorating & Carpeting Striken, N. Sirken, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., Tel. 6780066-6794647. SPITUATIONS WANTED The second st. 251 Tool 200, Within too., Switzerland.	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mil red entitle and commodify investments) leeks afractive position obroad. French or English speaking area. Willing to learn achievant languages. Ready to occup unimited work load if reminerations is in occordance. Please comitact JAJ Int'l Trading and finance, c. o. Koude Kaukenstrade 23, Box 9, 8 E200 Brugge, Belgem, Teles BIEZ? TOP EXECUTIVE considered projects. Accumulation of the proving own projects. Accumulation of the proving several years in the Mid. Resultation in motion of 33. Please reply a first moderne. Handle Trading a project years as empreson in the Mid. Resultation in motion of 33. Please reply a first moderne. Handle Trading a project years as the motion of the proving growth position with firm offering
は 20 mm で 19 7 3 mm か 19 mm で	Stock Indexes 2	Elicated	Interest Rates	Samonths	REAL ESTATE FOR SALE U.S.A. BORNO TO NEW YORK? Green with Connector, is near, between schools, lower toxes. Contour to for free informations Raylor Research Comments, and the toxes of toxes of the t	We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAX. Short term. Left Bort 12: 252 052 128 174 Anther- 794958. The control burgelows, 16 Controls, 16 Cont	TISEMENTS EK Page) REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worth; become operiment for month of July centrely located on Pera Box 3867, HT. 103 Kingswoy, London WC.? SERVICES ETHAN ALLEN INT'L Furniture and decorating for your home away from home office tool No charge for only of the following services: plans, delivery to shop or plane, oil export documents. INTERSTEO? Send for our 392, page guide. Ethan Allen, 71 Sth Awe, N.Y.C. 10003. Redecorating & Carpeting all strings of the following for the following services: plans, delivery to shop or plane, oil export documents. INTERSTEO? Send for our 392, page guide. Ethan Allen, 71 Sth Awe, N.Y.C. 10003. Redecorating & Carpeting all strings of the following for the following for the following services. Plans, and for our 392, page guide. Ethan Allen, 71 Sth Awe, N.Y.C. 10003. AMERICAN EXECUTIVE worth; for the following services: plans, allowers for the following services. Plans, 10 schools, 10 strings for plans, 10 schools, 10 strings, 10	BEGIAN, 30, working 10 years as INVESTMENT ADVISER (mil red entitle and commodify investments) leeks afractive powing order machine as in accordance. Please contact JAJ Int'l Trading and france is in accordance. Please contact JAJ Int'l Trading and france is in accordance. Please contact JAJ Int'l Trading and france. C. o Koude Kaulerstrade or 23, Box 9, 8 E200 Brugge, Belgem, Teles BIEZ? TOP EXECUTIVE considered frances, and france is a accordance. Please contact JAJ Int'l Trading and france, c. o Koude Kaulerstrade in construction of the start or Europe in construction and the start of Europe in construction and the start of Europe in construction and the promise of the start of the
日本のでは、「Table 1995 日本のでは、「Ta	Stock Indexes 21/2 27/2 27/2 27/2 27/2 27/2 27/2 27/2	Elicated	Interest Rates Dollar D-Mark 1	Samonths	REAL ESTATE FOR SALE CLASS REAL ESTATE FOR SALE CORNO TO NEW YORK? Green wich, Connected, is over toost. Connected, to receive the control of the lowless of the lowless properties in this unspen commany, sortile properties of first properties of the lowless properties in this unspen commany, sortile properties of first properties of the lowless propertie	We've got news for y We've got news for y Continued from Bac TE REAL ESTATE FOR SALE PARIS AREA FURNISHED LARGE RAX. Short term. Left Bort 12: 252 052 128 174 Anther- 794958. The control burgelows, 16 Controls, 16 Cont	TISEMENTS REAL ESTATE WANTED/EXCHANGE AMERICAN EXECUTIVE worth: bedroom apartment for month of July controlly located in Prof. Box 386, HT. 103 Kingsway, London WC2. SERVICES FIHAN ALLEN INT'L formative and decorating by syrucory plans, delivery in other profession of the following syrucory plans, delivery in other professions, and services plans, delivery in other plans, office tool No. charge for any of the following syrucory plans, delivery in other plans, office tool No. charge for any of the following syrucory plans, delivery in other plans, office tool No. charge for any of the following syrucory plans, delivery in other professions, in the second for our 372, page spirile. Either Allen, 71 Shr Ave., N.Y.C. 10003. MR. Redecorating & Carpeting Striken, N. Sirken, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., N.W., Suries and St. 251 Tool 200, Wash, D. Soules St., Tel. 6780066-6794647. SPITUATIONS WANTED The second st. 251 Tool 200, Within too., Switzerland.	BEGIAN, 30, working 10 years or INVESTMENT ADVISER (ref) recidency to years or INVESTMENT ADVISER (ref) recidency to exapt understone position obroad, French or English speaking orea. Willing to learn achterion languages. Ready to occupt unimited work load if remineration is in accordance. Fleate conflict. JAJ Inf Tracing and firenance. C. o. Koude Keukerstroot 22. Box 9, 8 EZOD Brugge, Belgem. Takes 81EZ? TOP ESCUTIVE considering own business of the proving own business own own of the proving own business owner of trough growth polyuring. Sales preferred by the proving owner of the proving owner

ì

Harris St. (2)

.

· · ·-- . ·

E

A

i

U

T

B.

В

0

N

D

E

В

E

E

40U HAVE

A LOT OF

RELATIVES.

DON'T YOU?

HI---MY NAME IS A

JOHN SNORKL

TCH! TCH! NOW DID 'E TELL ME TO WAKE 'IM AT THREE O'CLOCKOR

FOUR C+CLOCK?

OUR NEIGHBORHOOD

BEETLE IS SUPPOSED

TO BE HELPING YOU,

ZERO. WHERE DID

HE 60?

WAS SO FOOR ...

6UESS I DO...

HAD ANOTHER UNCLE

DEPOT IN CLARKSVILLE

HOW POOR

WAS IT?

WALKER

WAKEY

FINE _MY

FEE FOR

WAKEY.

DUMP

WHO WAS A BUS

I'M RUNNING FOR

CITY COUNCIL!

HIS BENCHES

FINALLY WORE

HIS COIN LOCKERS

FELL APART

IF ELECTED I PROMISE

TO PUT A PETUNIA T

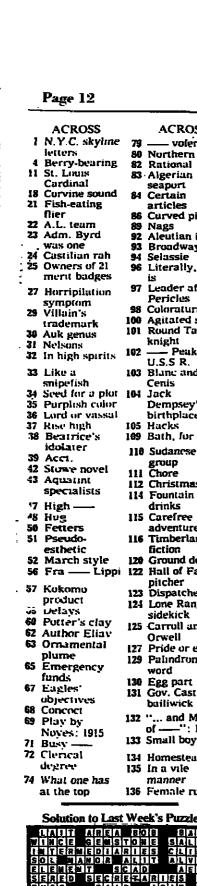
RED IN EVERY

PARK!

IT'S ONLY

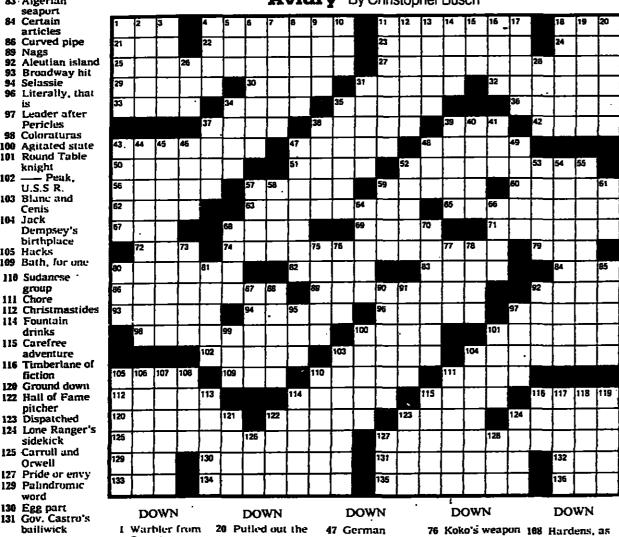
O, CTOCK!

OUT AND ALL



CROSSWORD PUZZLE Edited by EUGENE T. MALESKA

Aviary By Christopher Busch



132 "... and Memories 133 Small boy 134 Homesteaders 135 In a vile manner 136 Female ruff 9 Brains, in Curve 11 Stews 12 Unfold 13 Electron tube 14 Ramfis, in 15 Ending with graph and cord 16 Lanvard 17 Military exercise

18 Whirlybird

prixif

19 State without

ACROSS

— volente

Northern

82 Rational

83 · Algerian

seaport Certain

articles

Nags

86 Curved pipe

93 Broadway hit Selassie

96 Literally, that

97 Leader after

Pericles

knight 102 — Peak, U.S.S R.

103 Blanc and

Cenis

Dempsey's birthplace

109 Bath, for one

110 Sudanese

114 Fountain

115 Carefree

fiction 129 Ground down

pitcher

123 Dispatched

sidekick

127 Pride or envy

131 Gov. Castro's

bailiwick

129 Palindromic

word

30 Egg part

125 Carroll and

adventure

116 Timberlane of

122 Hall of Fame

group 111 Chore

Coloraturas

Agitated state

Round Table

Detroit Spurry Rubberneck 26 Rocketry Financial expert backer Transvaal settler Horace's " short Poetica'

28 "Downstairs" character 31 Tear drier, for 34 Endings with 6 Winged insects court and Office fixture front 8 Bastard wing 35 Bird's back. wings, etc. 37 Slots spot

45 Bird site in

46 Wrestling

California

38 More calamitous Abbr. 39 Joker 40 Outmoded 66 Cut 41 Chemical suffix drake 43 Brilliance 44 Falcons' concerns

47 German rillemen 77 Annoys 78 Cardinal point 48 Bill's follower 80 Org for 25

49 Precullege exams: Abbr. 81 Lay -52 Bird of prey 85 Isles in Malay Road gripper Archipelago Walks with heels turned out 57 VW competitor 58 Maori figurine

59 Prop up 61 London bourse 64 Made of wood 68 Gander or 70 Stilts' kin Fr. mining

75 Ariene and

87 Bird sound 88 Destiny 90 Feathers 91 Archie's "dingbat" 92 Alan or Robert 95 Courtroom

97 Knock out — - relief 100 Gannet 101 Domino 103 Toledo team 104 Cocktail 105 Young swan 106 Dawn 187 Found fault 127 Hdqrs.

110 Frothy wave III Two-seated carriage 113 City on the Meuse 114 Mass of fine bubbles 115 Writer Jones

cement

116 Mountain pass 117 Goose genus . 118 Rural crossing 119 Weatherman's device 121 Cancel 122 Sloveniv

woman 123 Satiric comedian 124 Order or arrangement: Suffix 126 Romantic poet 5

monogram

 \mathbf{x}

128 Goose egg

... AND I LEAVE MY ENTIRE ESTATE PO YOU HAVE ANY MONEY, EAWA?

KNOW YOU'V

THIS MILL 15 FIFTY WITH AN BILLY TOLD ME THAT HE'S ON PROBATION

idea

MEANWHILE, SHARON AWAKENS TO FIND BETSY IS GONE ACTUALLY, THE BROTHER WAS RESPONSIBLE FOR A SERIES OF T'S ALMOST BECAUSE HE GOT INTO SOME TROUBLE WHO HAS ARMED ROBBERIES BILLY WAS AN SHE SAID SHE INNOCENT VICTIM BUT HE CAN'T ABOUT A YEAR DIED WAS GOING TO BETS) STUDY AND THEN COME AFFORD TO BE ARRESTED FOR TO BED! ANYTHING!





HE SAID THE

worst part

WAS JUST

WAITING

AROUND

CONDEMNED

HE SURE ISN'T STICKING

HIS NECK OUT!

YOU KNOW HOW

HE STEPS ON STUFF

IN A FULL WASTE

BASKET TO TAMP

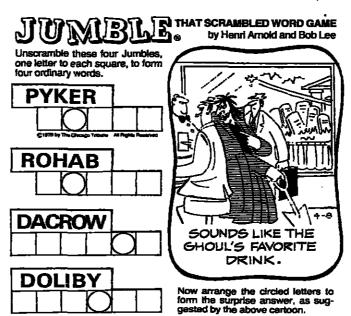
IT DOWN?

TO BE

سعدن مزودت فتشر

DID THE TOOTH FAIRY

LEAVE [.O.U.S.P



Print answer here: Jumbles: BOUND EMBER INFORM QUENCH Answer: He called her Sugar because he thought she was this —SO "REFINED"

DENNIS THE MENACE

T TOLD HIM YOU COULD TALK HIS EAR OFF."

WEATHER

voriable cloudy variable overcost clear showers overcost cloudy clear clear showers rain cloudy clear clear clear clear clear clear clear clear cloudy MILAN MONTREAL MOSCOW MUNICH NEW YORK ANKARA ATHENS BEIRUT overcost overcost clear clear clear clear clear cloudy cloudy cloudy cloudy cloudy cloudy cloudy cloudy showers overcast overcast overcast overcast overcast overcast overcast BERLIK BRUSSELS NICE OSLO PARIS PRAGUE BRUSSELS
BUCHAREST
BUCHAPEST
CASABLANCA
COPENHAGEN
COSTA DEL SOL
DUBLIN
EDINBURGH
FLORENCE
FRANKFURT
GENEVA
HELSINKI
ISTANBUL
LAS PALMAS
LISBON
LONDON
LOS ANGELES ROME SOFIA STOCKHOLM TEHRAN TELAVIV

INTERNATIONAL FUNDS ADVERTISEMENT April 7, 1978

	The net easet value quotations shown below are supplied by the Funds listed with the exception of some Swiss funds whose quotes are based on issue prices. The following marginal symbols indicate frequency of quotations supplied for the BIT: (d)—daily: (w)—weekly;							
	(m)—monthly; (r)—regularly; (i	}irregulari						
	BANK JULIUS BAER & Co Ltd:		Other Funds					
	- (d) Boerbond	SF 761,75 SF 675,00 SF 542,00 SF 458,00	(w) Alexender Fund	\$5.84 \$ 6.80 \$ 1.37 \$ 10.11				
ı	BANQUE VON ERNST & CIE.:			LF 1.309.00				
1	— (d) CSF Fund — (d) Crossbow Fund j— (d) ITF Fund N.V	SF 16.57 SF 3.77 \$7.28	(d) Capital Rentinvesi	\$ 170.58 \$ 2.68 \$ 665.73 \$ 7.43				
1		 \$14.21	(w) Convert Fd Int. 8 Carts	514.03				
1	(w) Capital Int'l	\$ 8.55 5 25.71	(d) Convert, Bond Fd. N.V (w) O.G.C	\$ 9.34° \$ 40,67 \$ 0.55 \$ 13.82				
1		\$ 287.25	(w) Drayfus Intercontinent	\$12.72				
l	— (d) Actions Suisses — (d) Conasse — (d) C.S. Fends-Bends — (d) C.S. Fends-Ini7	\$ 287.25 SF 389.00 SF 45.75 SF 54.75 SF 69.25	(w) Drayfus Intercontinent (d) Europe Obligations (w) First Eogle Fund (w) First Nat'i City Fund (d) First Nat'i City Fund	LF 1,084 8 3,214,37 \$ 189,96 5 28,32				
1	— (d) Energie-Volor	SF 408.00 SF 118.25	(w) Fonselex Issue Pr	SF 1.431.00 SF 61.62				
	— (d) Europo-Voler DIT INVESTMENT FRANKFUR		(d) Forsieles Issue Pr	\$ 10.11 DM 44.68				
1	— (d) Concentro	DM 20.60	(d) FrenkfTrust Interzins (d) Fund of N.Y. (ex-divid.) (w) Future Australia Fd	\$ <i>0.49</i> Aus\$8.21				
	(d) Infl Rententond FIDELITY (BERMUDA):	DM 71.00	(w) Guardian Gr. Fd. Int'l (w) Houssmann Hidas. NV (I) H.O.I.T. Habet	\$8.85 \$1.894.66				
ł		\$ 21.87	(I) H.O.I.T. Hobet	\$ 27.15				
	- (w) Fidelity Amer. Assets - (d) Fidelity Dir. Svgs. Tr - (w) Fidelity Ind'l Fund - (w) Fidelity Pacific Fund	\$57.91 \$ 19,41	(d) loofund	\$9.61 \$ 8.77 *				
	- (w) Fidelity Pacific Fund - (w) Fidelity World Fd	\$42.84 \$12.85	(d) Interfund S.A(w) Intermorket Fund	\$ 137.42 FB 29.00				
ı	G.T. (BERMUDA)LIMITED:	- 1265	(w) Intermorket Fund	5 23.62				
	— (w) Berry Poc. Fd. Ltd — (w) G.T. Deller Fund	543.96 5 6.64	(r) (nvest Aligntiques	\$ 3.93 \$ 36.49 \$ 8.18				
1	JARDINE FLEMING:		(r) Halfortune Int'l Fd S.A	\$7.38 4 34 85				
	— (r) Jordine Jopan Fund — (r) Jardin S.East Asia	\$63.36 \$ 12.25	(r) Japon Growth Fund (d) Japon Selection Fund (w) Japon Pacific Fund (d) KB income Fund	\$ 24.85 \$ 59.75 \$ 33.84				
1	LLOYDS INT. MGT @ 179 GENE	VA 11	(d) KB income Fund	LF 1,597,90 \$ 10,52				
1	+(w) Lloyds Int'l Growth +(w) Lloyds Int'l Income	SF313.00 SF313.50	(d) Kleinworf Benson Ini. F (w) Kleinworf Bens. Job. F (1) Leverage Cap. Hold (w) Lexfund	\$30.97 \$35.75 \$22.55				
ı	PROPERTY GROWTH OVERS II		(m) MAGNUM Fund Ltd	\$43,34				
Ì	— (w) U.S. Doller Fund — (w) Sterling Fund	5 84.32 5 127.58	(d) Medicianum Sel, Fund (d) Neuwirth Int'l Fund (d) Neuwirth Inv, Fund	5 7.29 5 0.83 5 2 13				
1	(w) Sepro (NAV.)	\$ 12.15	(w) Nippon Fund	\$ 2.13 \$ 16.37 \$ 5.71				
1	SOFID GROUPE GENEVA — (r) Parton Sw. R Est	CE 1 647 00	(W) NOT. AMET. BOTK FO	\$ 5.31 5 52.15 \$ 25.64				
1	— (r) Securswiss	SF 1,547,00 SF 1,027,00	(a) Rema Fund	LF 1.963.00				
1	SWISS BANK CORP:	SF 122.25	(d) Rentinvest	LF 657,00				
	— (d) America-Valor — (d) Intervalor	SF 50.25 SF 402.75 SF 234.50 SF 72.50	(d.) Sate Trust Fund (w) Samural Portfolio	\$ 10.06 \$F 64.30 \$ 15.51				
1	(d) Intervalor	SF 234.50	() Share Realty N.V () Share International N.V	\$4.68				
1	(d) Universal Funo	3F 1 (100	(w) SAM Special Fund	DM 97.30 8 396.10				
1	UNION BANK OF SWITZERLAN		(w) Talent Global Eurod	89.51				
-1	- (d) Amca U.S. Sh	SF 20,75 SF 41,75 SF 69,50	(w) Takya Pac. Hold (Sea) (w) Takya Pac. Hold N.V (w) Transpecific Fund	\$ 37.05 \$ 50.83 \$ 30.07				
Ì	— (d) Amea U.S. Sh		(w) United Cap Inv. Fund	\$2.53				
1		SF 76.25 SF 54 SF 72.50	(w) United Cap Inv. Fund (m) Utd Int'l Management Fd. (w) Universal Dellar Trust	\$ 101.44 \$ 4. 8 5				
	- (d) Pocific Invest	\$ <u>F72.50</u>	(d) U.S. Trust invest Fd (w) Western Growth Fund	\$945 \$594 \$39447				
	— (d) Globinvest	SF 223.50 SF 125.50 SF 185.00	(d) U.S. Trust invest Fd	\$ 396.47 \$ 58.44				
		الإنبود دد	Park Medicaldo Propins	8 4 175 00				

JNION INVESTMENT.Frankfur

BOOKS.

THE AMBIVALENCE OF ABORTION By Linda Bird Francke. Random House. 261 pp. \$10. ABORTION IN AMERICA

The Origins and Evolution of National Policy. By James C. Mohr. Oxford. Illustrated. 331 pages. \$12.50. Reviewed by Christopher Lehmann-Haupt

mere book, or book reviewer, is going to do it. Still, between abso-lute positions pro and con there is plenty of room for argument, and withdraw from their partners. plenty of argument indeed has been raging within that room. On the one hand, there is a growing belief, particularly among right-to-lifers, that many women have begun to take too casual an attiternative to contraception. On the other hand, some feminists cannot understand what all the fuss simple and absolutely liberating. They think that whether a woman is casual about the experience or

She wants to do it with more evidence than is offered here by her own abortion experience, which abortion experience. was unahppy ("A very little ghost" kept appearing and wav-ing at her whenever she saw "something beautiful, like the full America: The Origins and Evolu-moon on the ocean last tion of National Policy." This is a weekend") and which evoked a somewhat scholarly but altogeth-

So after briefly describing the history, techniques and current availability of abortion, she devotes the balance of her book to verbatim statements of various people she interviewed. Her subjects include single women who had abortions both after and before the 1973 Supreme Court de-cision to legalize abortion, both in permissive attitude did prevail. It their first and second trimesters. as well as married women, men. couples, teen-agers, parents and "women looking back" to 30, 40

them, will give comfort to neither the right-to-lifers nor the more extreme feminists. If there is any these very same groups that are generalization we can draw from now in favor of abortion, and are the rambling testimonies printed now, in the one case, performing here, it is that whatever the reait, and, in the other, the recipients sons were that these people decid- of it. ed to undergo abortion - and some of them were casual, while most were carefully considered - a book reviewer for The New York almost no one came away from Times.

the Mark; "— Ex-Divident;

— Not Avallable; BF — Beigl
— Luxembourg Francas; SF
+ Offer prices; a — Asked;
e P/V \$10 to \$1 per unit. \$/\$ —

Ex RTS; "\$" — Suspended;
municated; * — 4 - Rademal

THE Supreme Court in all its the experience unscathed. Most of wisdom has not been able to settle the vexing issues surrounding abortion. Nor have philoso-Many were damaged psychologiphers, from Aristotle all the way cally too, experiencing fear, guilt down to Phyllis Schlafly. So no over their lost children, a subsequent revulsion for sex, lowered

If one can trust Miss Francke's N her book she announces that "in a tude toward abortion, that they most disturbing trend, some have come to see it as an easy altesis, which is a test designed to pinpoint possible metabolic and developmental disorders in the is about. They see abortion as fetus done solely to determine the sex of the fetus, and are opting to abort it if it is a girl." But how many "some women" are, or how not is nobody's damn business.

Between these two positions is where Linda Bird Franke's "The Similarly, but far more damagingly, there is no evident rationale for her sampling. For all we what the actual experience is like. know, the interviewees were cho-She wants to do it with more evi-sen simply to illustrate what Miss Francke herself believes about the

A far more interesting and pertinent study of the subject is James C. Mohr's "Abortion in storm of response when she described it in a New York Times's Op-Ed piece under the byline "Jane Doe."

Solution and a strict and a solution policy in the 19th-century, by a professor of history at the University of Maryland Baltimore County. There is not space here to describe exactly how Prof. Mohr thinks we got from the completely permissive attitude toward abortion that prevailed in the United States until 1840 to the strict prohibition that had triumphed by 1900.

was in large part the desire of the medical fraternity to professional-ize itself and anxiety on the part upper-middle-class white and 50 years ago.

Anglo-Saxon Protestants over
The results. if we can trust their declining birthrates that contributed to the legal proscription of abortion. It is, ironically.

Christopher Lehmann-Haupt is

Yesterday's

كذا من الأصل

Dallas Yawns at NFL Draft Prospects

DALLAS April 7 (UPI)—The chance. The mortality rate is National Football League draft is going to be high."

its No-I draft pick for some big offensive linemen. And then there will be a slight bit of some big of the lies. will be a slight bit of suspense as to whether Earl Campbell will be the top selection despite his poor showing in the Cotton Bowl.

But after that it looks like a bunch of yawns.

At least that is the way they figure it in the scouting department of the Dallas Cowboys.

"It is not a good draft," said Cowboy vice-president Gil Brandt, "For some unexplained reason, it's just not very good at all. When you get past the third round in the draft this year you

less than a month away and it would seem that the big question is why does anybody care?

The fact that good players are in short supply should not come as good news for the Cowboys they have the burden of drafting

There is this always the persistent rumor that Dallas will pull off another spectacular trade this year, acquire Tampa Bay's No. I pick and select Campbell to go in the same backfield with Tony

But Brandt insists there is no chance of that happening and he thinks the trade Dallas made with Seattle to acquire Dorsett last year makes it tough for Tampa Bay to trade with anybody. "Tampa is trying to trade its first choice." said Brandt. "But I

don't think they will be successful because of our trade last year.

"But what you have is the Tam-pa fan saying, 'Gosh, look what Dallas did with Dorsett.' If they trade the choice, they have to ask for too much to satisfy the fan. It puts more pressure on Tampa to make a better deal. And the more you ask the tougher it is to deal."

Linemen Sought If Tampa keeps its pick, will it

take Campbell?
"You always need a player like Campbell." said Brandt. "But maybe some teams would want to strengthen themselves in another area. Tampa's defense was great, but their offense was terrible. Maybe they feel they can get two outstanding linemen and maybe a

"I think that trade benefitted both teams. Seattle won five games—more than any expansion "I' you can get offensive line-men like Dan Dierdorf and Conteam has won in its second year—and all those players they got in our trade contributed.

rad Dobler, then a back like Jim Otis can gain 1,000 yards.

As for the overall draft, Brandt As for the overall draft, Brandt

is very unimpressed.
"This is not the year for the really good player," Brandt said.
"Usually there are 10 to 15 outstanding players, the type that in three years you know will be Pro Bowl material. I don't see that

"There is no depth in any posi-tion. For example, you have two pretty good running backs in Campbell and Terry Miller of Ok-lahoma State. There are a couple of good offensive linemen but there really are not any outstand-ing defensive linemen.

"Last year, 19 linemen were 1972 crop. Eleven of the 26 play-drafted in the first round, but I ers taken in the first round that don't think you will see that happen this time.



Earl Campbell

"This year reminds me of the year are no longer in pro football."

Former Olympic, NFL Star

Bob Hayes Arrested for Drugs

DALLAS, April 7—A national youth athletic program has severed its association with Bob Hayes after the Olympic gold-medallist and former Dallas Cowboys wide receiver was arrested on drug charges.

Hayes, 35, was charged yester-day with delivering cocaine and qualudes to undercover officers.
"Due to this incident, we do not feel that it is appropriate that he continue his association with our national track and field youth program," a spokesman for the Hershey Foods sport program

Hayes was released on \$30,000 bond. He won two gold medals at the 1964 Tokyo Olympics and his 400-meter relay record still

The fleet Hayes spent 10 years as a wide receiver for the National Football League's Dallas Cowboys With 76 touchdowns, he is the leading scorer in Cowboy history. He also remains the team's top all-time receiver with 358 catches for 7,177 yards and punt returner, with 1,147 yards on

102 returns.

Hayes has been involved in the youth program as a coach and

The Hayes arrest follows a series of drug-related incidents involving current or former athletic

Don Murdoch, hockey star, in court between NHL games: cocaine Earlene Brown, U.S. shot putter in Hayes's days of Olympic glory, arraigned: "angel dust."

Al. Jones, not so long ago
among boxing's top 10
heavyweights, awaiting grand jury

action: cocaine, Lem Barney, NFL star, alleged in an affidavit to have been wiretapped by officers in a "pertinent' conversation: cocaine and amphetamines. Darrell Shepard, University of Houston quarter-back whose recruitment last year landed the Cougars on NCAA



LONDON, April 7 (UPI)—International sports federations joined the International Olympic Committee today in warning Los Angeles that it would not be awarded the 1984 summer Olympics even though it was the only bidder unless it changed its attitude toward the Games.

Thomas Keller, president of the General Association of International Sports Federations, said that the financial demands made by Los

Los Angeles is the only city bidding for the games but already is involved in a wrangle with the IOC about how millions of dollars from television rights should be controlled.

Keller, representing the 26 Olympic sports federations, warned Los Angeles that if its bid was not accepted by the IOC at its session in Athens next month, the bidding could always be reopened and another

"In my opinion the Los Angeles approach is unacceptable," Keller

six feet and made that putt for his flies to Mexico City this the weekend to meet the Los Angeles dele-On the par-4 14th, a pitching fourth straight birdie. Then he gates in a bid to find a compromise solution before the formal bid is

> lion for the first time with NBC already having paid \$85 million for the U.S. rights. The potential value of the 1984 rights could be more

L.A. to Vote on Funding

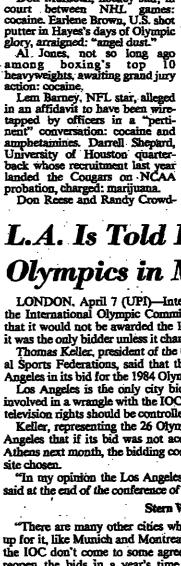
LOS ANGELES, April 7 (UPI)-With Los Angeles and the IOC waging a power struggle over the 1984 games, the City Council moved yesterday to allow voters the power of imposing strict limits on spend-

The council voted 11-1 to place on the November ballot an Olympic spending ban that would be written into the city charter, beyond the

games, except for those that fall mainly on Olympic tourists-such as

the city's credit in any way to help stage the games, except for loans guaranteed by the organizers' contracts—such as sale of television rights-plus \$5 million in "seed money" if covered by future income from taxes on the games.

The measure does not offer voters a chance to vote against hosting





John Schlee follows through on 14th tee in first round of Masters.

AUGUSTA, Ga. April 7
(NYT)—John Schlee, who imagined he was playing this or that hole in the Masters with every practice shot in recent weeks. practice shot in recent weeks, turned fantasy into reality yester-Schlee, who quit the PGA tour for a club job last season after a

series of injuries, carded a four-under-par 68 and took a one-shot 1977, respectively. lead in the opening round of the 42d Masters tournament. Joe Inman, the last player on the Augusta National Golf Club course, had a share of the lead until he bogeyed the 17th hole. He wound up with a 69.

But the day belonged to Schlee, who has a fixation about yardages he can trust. One day in last year's Masters he was so annoyed at having chosen wrong clubs n the par-3 12th hole that he borrowed some gallery rope and mea-sured the distance from tee to green for himself.

It turned out to be 155 yards, exactly what the scorecard and his caddie had said, but now he called for a 7-iron.

Yesterday, the 39-year-old pro from Texas hit the 7-iron on that hole 12 feet from the pin and sank the putt. That deuce was the first of four consecutive birdies that propelled him to his 68.

ters to round out his collection of

NEW YORK, April 7 (AP)-Fresh new faces appear on several

make room for the newcomers. Bonds Moves On

Infielder Ted Cox, who can

play third base or first base, was

the key man for Cleveland in a

six-player trade that sent pitcher

Dennis Eckersley to Boston. Cox

was the most valuable player in a major league record for rookies

and Salt Lake City.

ball season opens.

Among those tied with Watson

at 73 were three other former the Rancho Viejo Country Club winners—Arnold Palmer (four near Brownsville, Tex., and he nimes). Gay Brewer and Tommy says that he enjoys teaching. He Aaron. Others at 73 included would like to go back to the tour Hale Irwin, the 1974 United States Open champion, Lee Elder and Gil Morgan.

A key to Schlee's round was the

vears as a pro. Eichelberger was 15. He reached the green of the series of disasters left him at eight threaded through the trees, and over par after 14 holes. He fin- he got down in two putts. ished the day at 79. Johnny Milwas reassured because this was ler, who was quite sharp here un-his own measurement, and it til two years ago, shot 77.

Looks to the Stars

John Schlee is 6 feet 3 inches and the 11th, where he tall, has brown hair that is graying at the edges, and very long teeth. He was the PGA Tour rookie of the year in 1966 and he

72. This group included Jack there was surgery for a ruptured Nicklaus, the only man to win the disc in his back in January, 1976. Masters five times: Gary Player, a Next was a knee operation that two-time Masters champion; Tom summer. And last year his left Weiskopf, who has tied for sec-thumb was so severely bent that it ond four times; Jerry Pate and constantly pained him, and he left Hubert Green, United States the tour. Only recently did Mike Open champions of 1976 and Morley, a fellow pro, teach Schlee how to time his release after im-Tom Watson, the defender, pact to avoid aggravating the

injury.
Schlee is now golf director of

One of the most awkward fact that he reached the greens on rounds of the day was turned in three of the four par-5 holes in by Dave Eichelberger, who has two shots and scored birdies. won two tour events in his 12 Those holes were Nos. 2, 13 and one under par after seven holes. A 565-yard second with a 4-iron

Schlee carded a birdie on the fifth, a par-4 hole of 450 yards, by hitting a 6-iron to three feet. He followed that with bogeys on the seventh, where he was bunkered, and the 11th, where he hit his sec-

made the top-60 money list six in what is called the Amen Coryears. His best year was 1973, ner The 12th one of the most difwhen he was runner-up in the ficult par 3's in U.S. golf, is tricky major championships, shot 70 for and \$118.017. He also had a hob- watch hand pointing at 2 o'clock, protecting creek and the front wedge put him 12 feet from the parred his way in.

Many Teams Are Counting on Young, Fresh Blood

Club selection is often a guessing

Lee Trevino, who needs a Mas- United States Open; in that sea- because the green slants away

This time Schlee did not guess, are to round out his collection of son he won the Hawaiian open from the line of the fairway, like a and his 7-iron arched over the

Then he came to the 12th hole and because it is in a hollow bunker to the green. On the next what is called the Amen Corwhere the wind swirls constantly. bole, a par 5 of 485 yards also menaced by the's creek, Schlee

got home with a 6-iron to 35 feet. and he got down in two putts.

High Hopes in Atlanta

RBIs last year. Murphy hit .316 in .

an 18-game trial with the Braves

for Revering.

last season.

pin and he sank the putt for birdic. On the par-5 15th, a 4-wood sailed over the pond to the back to stage the games. of the green. He chipped down to

Transactions

BASEBALL

SEATTLE MARINERS—Signed Bill Plummer, culcher, to a contract with San Jose of the Pocific Coast League, TORONTO BLUE JAYS—Signed Michael Reds received pitcher Vida Blue and sent Revering and \$1.75 million to the A's. When that deal fell through, Oakland traded pitcher Doug Bair to Cincinnati

PHILADELPHIA PHILLIES—Released Terry Harmon, inffelder: Optioned Dan War-then, pitcher, outright to Oklahoma City of the American Association.

Atlanta is high on catcher-first baseman Dale Murphy, who bat-ted 305 in 105 games at Rich-ST.LOUIS BLUES—Sent Ken Richardson forward, to Salt Loke City of the Central Hackey League. mond with 22 home runs and 90

Thursday's Line Scores

No team has a more exciting rookie class than the defending American League West champions. the Kansas City Royals:-out-

fielder-first baseman Clint Hur-dle, infielder U.L. Washington and outfielder Willie Wilson. Hurdle, who won the veteran John Mayberry's job this week, batted 328 last season at Omaha. Washington, who stole 39 bases and hit 255 at Omaha last year, batted .375 during exhibition

Seattle Loses to Twins

Guthrie Gets \$100,000 to Attempt Indy Twins to lead the Minimistral Twins to lead the Minimistral Twins to a 5-4 victory over the Mariners last night.

Mariners last night.

The 21-year-old Enickson, a nonroster player in the Twins' camp this spring, was relieved by winnipes 7. New Tom Johnson in the seventh inning. He wild-pitched home a run in Seattle's two-run raily, then gave up a home run to Ruppert Jones in the ninth before nailing down the game.

The Twins lost, 3-2, to the Mariners in the major league opener on Wednesday night.

Reds Beat Astros

League opener yesterday.

NBA Results

Washington 172, Beston 103 New York 129, Defroit 125, Clevekond 177, All Mouttoe 105 San Antonio 122, Konsos City 116 Denver 111, Phoents 105 Golden State 172, Particing 96

NHL Results ffalo 5. Baston 2 Ikadelphia 3. New York Rangers 0

WHA Result

Winnipes 7, New England 4 Valdes Training

SAN REMO, Italy, April 7 (AP)—The world middleweight boxing champion, Rodrigo Valdes, has started training in this Italian Riviera resort for his April 22 title defense here against Hugo Corro. Corro is due in San Remo next week.

Home Run Record

TOKYO. April 7 (AP)--Adrian Garrett, a former major league outfielder, set a Japanese record this week by hitting home runs in games.



er, former Miami Dolphin line-men, marking time in Dade County Stockade, Miami, hoping they will be released early for good behavior in time for Reese to join the Toronto Argos and Crowder maybe to hook on somehwere for NFL action this

Olympics in Money Battle

Angeles in its bid for the 1984 Olympics were "unacceptable."

said at the end of the conference of European sports ministers.

"There are many other cities which could handle it and are geared up for it, like Munich and Montreal," Keller said. "If Los Angeles and the IOC don't come to some agreement, then there is no way but to reopen the bids in a year's time." Support from the international federations for the IOC's tough line with Los Angeles was expected because the federations all get a heavy slice of the television money. They could lose much of this money if the city controlled the television revenue, using it to finance the games themselves.

Although the members of the IOC will decide the late of the Los Angeles bid, all 26 federations will have representatives at next month's session, and without their approval the IOC would be unable

Keller will accompany Lord Killanin, the IOC president, when he placed before the full IOC session May 17.

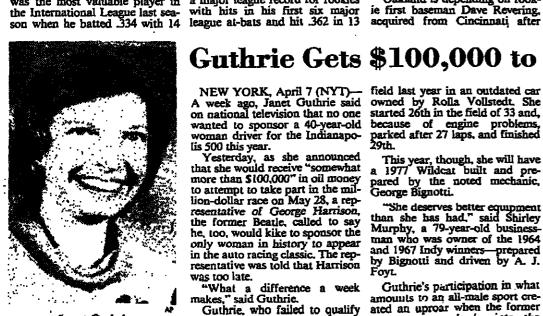
Television rights for the 1980 Moscow Olympics will top \$100 milthan twice that, according to television sources.

ing city money on them.

power of city officials to change. The charter provision would forbid tax increases to pay for the

taxes on tickets, parking and hotel rooms -instead of residents. It would forbid the city from spending any municipal funds or using

the games at all—which some wanted—nor to ban all city spending on the games.



Janet Guthrie

major league rosters as the base-Perhaps the team depending most on its rookies is the Detroit Tigers, who move into the American League season with a new double-play combination composed of rookies, second baseman Lou Whitaker and shortstop Alan Trammell. Both move to the majors following impressive minor league seasons at Montgomery. Trammell batted .291 and Whitaker .280 there. The Tigers have so much confidence in the pair that they traded Tito Fuentes and Tom Veryzer, their second baseshortstop combination in 1977, to California made a similiar move, trading an established star outfielder, Bobby Bonds, to make room for rookie Ken Landreaux, the minor league player of the year last season. Landreaux batted .357 with 27 home runs, 116 runs batted in and 20 stolen bases with Angel farm clubs at El Paso

Cincinnati shortstop Dave Concepcion takes the throw from catcher Johnny Bench at home as Houston's Enos Cabel steals slides safely into second base vesterday on steal.

homers and 81 RBIs with the Red Sames when the Red Sox called batting 300 with 29 homers and Sox's Pawtucket farm club. He set him up last September. batting 300 with 29 homers and 110 RBIs for the Reds' Indianap-

Oakland is depending on rook-

ie first baseman Dave Revering, ally traded to the A's twice.

lis 500 this year. Yesterday, as she announced that she would receive "somewhat a 1977 Wildcar built and preresentative of George Harrison, the former Beatle, called to say he too, would kike to sponsor the only woman in history to appear in the auto racing classic. The representative was told that Harrison

was too late. "What a difference a week makes," said Guthrie.

Guthrie, who failed to qualify for the 1976 Indy 500, made the amateur racer broke into the Indy."

NEW YORK, April 7 (NYT)— field last year in an outdated car Indy-car ranks in 1976. However, A week ago, Janet Guthrie said owned by Rolla Vollstedt. She on national television that no one started 26th in the field of 33 and, wanted to sponsor a 40-year-old because of engine problems, woman driver for the Indianapo- parked after 27 laps, and finished

more than \$100,000" in oil money to attempt to take part in the million-dollar race on May 28, a rep-"She deserves better equipment than she has had," said Shirley

Murphy, a 79-year-old business-man who was owner of the 1964 and 1967 Indy winners prepared by Bignotti and driven by A. J. Guthrie's participation in what

the fears of veteran drivers that she would be "unsafe" have not materialized. Guthrie, in two seasons, has been safe. She also has been slow, failing to finish in the top 10 of any United States Auto

olis farm club. Revering was actu-

"Of course, we've no way of really knowing how good, or how bad she is." said one auto racing figure. "She really hasn't had good equipment. And she carries the burden of the women's movement on her shoulders. She doesn't take risks because tons of publicity would come down on her if she ever had an accident. And if you don't drive aggressively, you don't win. I don't think there's any chance she can win at

games and Wilson, who batted 281 and stole 74 bases at Omaha, hit .259 in training camp.

SEATTLE, April 7 (AP)-Righthander Roger Erickson, making his first big league appearance, limited Seattle to 5 singles in 6 imings and Roy Smalley and Willie Norwood each drove in two runs to lead the Minnesota

CINCINNATI, April 7 (AP)— Joe Morgan drove in five runs and keyed a five-run lifth-inning rally with a two-run double as the Cincinnati Reds beat the Houston Astros, 11-9, in the National each of the season's first four



the official distributor for the Austrian National Lottery. 1061 Vienna, Austria. Please send me a brochure and ticket application form for the Austrian

City/Country

Art Buchwald

Back to Bartering

sick, sagging sinking or collapsing under its own weight.
It wasn't always like that. For years after World War II, the dol-

lar commanded respect in every part of the globe. It was the golden age for Americans and we were sought after, flattered. admired and seduced by people dealing in less vaunted cur-

rencies. None of us ever dreamed that some day the dollar would be treated in Europe and Japan as a terminal

What went wrong? I discussed this the other day with Alain, a French friend, who believes the started shortly after the war end-

He told me, "It wasn't the dollar we were so interested in at that time as American cigarettes, nylon stockings and Hershey bars. If you recall, back then the Europeans were much more interested in bartering for those items than they were in acquiring mon-cy. We were perfectly willing to continue taking your cigarettes, nylons and Hershey bars in exchange for lodging, food and favors. But your government forced the dollar on all of us, and we took in so many of them over the years that we finally said, 'Enough is enough'."

"Are you trying to say that if the Americans had stuck to cigarettes, nylons and Hershey bars the dollar wouldn't be in trouble

today?"
"Of course. Europeans have an insatiable appetite for cigarettes, nylons and Hershey bars. But when you've seen one dollar you've seen them all.

WASHINGTON—I've been wanted if you had stuck to barter-giving a lot of thought to the dollar lately. Depending on what paper you read, the dollar is was to flood our countries with dollars. What you forgot is that

tion increased."

faith in chocolate than we have had in our money."
"Yet, Alain, there is a flaw in your argument. The Europeans started to make their own cigarettes, nylons and candy bars af-ter the war. We would have had to devalue ours as your produc-

Europeans have always had more

"We only went into the ciga-rette, nylon and chocolate bar business after our sources of these goodies dried up. In Germany, France and Italy you discouraged your GIs from using cigarettes as currency. You told them if they waved nylons or Hershey bars un-der our noses they would be considered ugly Americans. But we never thought that way. A carton loss of confidence in the dollar of cigarettes, or a pair of stockings, or a Hershey bar with almonds in it is something a person

never forgets."
"Would you advise the United States to get off the dollar kick and go back to trading in those particular items again?"

"It couldn't hurt. But I would stay away from the low-tar cigarettes because Europeans like their tobacco strong. And you might substitute pantyhose for nylon stockings."
"What about Hershey bars?"

"I wouldn't mess with them. Don't forget, we're very strong on

tradition."
"It could be the solution," I told Alain. "God knows, it worked for us after the war. We've been so blinded by our economists that we've forgotten the things that really count with people. Perhaps if American tourists filled up their suitcases with pantyhose and chocolate, the dollar would be king again."

Alain said, "It's a little late, but it's worth a try. The gnomes of Switzerland might scream, but I don't know one Frenchman who would not rather have a pound of "We were willing to go on for-ever giving you anything you gold."

MARY BLUME

The Muppeteers Are the First to Laugh

L ONDON (IHT)—The office TV monitors at Elstree Studios are tuned to the shooting, a floor below, of "At the Dance," a regular feature of "The Muppet Show" in which farmyard animals foxtrot lightly in a palais de danse decor and exchange old-time vaudeville patter.

"Ah hate barn dances. Ah only come for the door prize."
"What's the door prize?" "A ticket to the next barn

Through countless retakes the people in the offices chuckle. Nowhere else in television do you see chuckling producers

and writers. "It's a joy to do the show, the end product is so pure. says the producer, David Lazer, who has worked with Muppet inventor Jim Henson since the days when a Muppet named Rowlf starred in coffeebreak films for IBM sales meet-

"The whole show is designed to amuse the people who do it," says Jerry Juhl, a writer who has been with Henson Associates (or HA!) since 1961 and worked with Henson on the ground-breaking "Sesame

"A French reporter wanted a deep analysis of our comedy. I'm afraid we put her on a bit. We said it had a lot to do with anarchy.

Despite Henson's triumphs on "Sesame Street," which he still commutes across the Atlantic to do, every American network turned down "The Muppet Show" on the grounds that adults wouldn't watch it. Britain's ebullient Lord Grade, who has backed everything from Englebert Humperdink to Jesus of Nazareth, took it on. It is seen each week by 210 million people in 103 countries.

The Muppets are mostly made of foam and cloth and worn on the puppeteer's upraised right arm, which causes a lot of back trouble. The most brilliant puppeteer is Frank Oz—"the person most responsible for the Muppets being funny," says Jim Hen-son—a bald, mustached rather



Jim Henson with Kermit.

remote figure who plays Fozzie Bear, Animal, Sam Eagle and, above all, Miss Piggy.

"Frank took Miss Piggy and made her into a superstar," says David Lazer. Miss Piggy is a ravishing liberated blonde with a fearful karate chop. She is in so many scenes these days that she has to be remade in the workshop once a year, which is tranmatic as they always come out a little different. "Last year she put on a little weight," says the workshop

The show's loose framework involves a group of Muppets trying to put on a show, abetted by a human guest star and heckled by two ill-tempered old-man Muppets named Statler and Waldorf. Kermit the Frog. a 22-year-old Muppet who also appears on "Sesame Street" and is played by Jim Henson, is the harassed director and M.C. Besides Fozzie Bear, a spectacularly insecure comic ("Frank wants him to have group therapy," says Jerry Juhl), there is the manic Great Gonzo, some super-cool pit

ens.
"We've been thinking of adding a whole new area backstage—a canteen with a waitress giving out bad food and

musicians, and a cast of doz-

cold coffee. She's very surly and aimiable," says Jerry Juhl. Each week there is a live guest star-Bob Hope, Julie Andrews. Lena Horne, Liberace, Rudolf Nureyev, who danced "Swine Lake" with Miss Piggy. Many stars worry about being upstaged by the Muppets.

"Some of them say no one will look at me." David Lazer says. "Somehow, it's Jim Henson's genius, they are showcased—we bring out a

new dimension."

Henson may be television's only genius: The only one to bring something original to a medium based on forms filched from radio, variety and films. "I love television-all the things you can do with it as a form," he says. The Muppets were invented for TV and he uses them to shrink or stretch the screen, playing with pro-portion so that the Muppets appear to be one size with each other, another with guest stars,

but always keep their physical integrity. The effect is of an entirely coherent world ruled by some private logic, where everything has its place.

Henson is tall and lean with deep-set eyes and the look of the leader of a commune, which in a sense he is. When he

waits on the sidelines wearing Kermit (he also plays Rowli, Mr. Walford, Mahnamahna. Dr. Teeth and Capt. Link Hogthrob), he is like Frank Oz, off in another world. When he is in the workroom, chatting in front of boxes labeled assorted arm wires, plain arm wires, newfangled arm wires, he is serious, communicative, ana-

"We're always trying to develop new things, new charac-ters," he says. One is Fleet Scribbler, the gossip columnist. "We talked a lot about Fleet Scribbler, we used him a lot. We couldn't get a handle on his character. Now he's hanging on

The Muppeteers believe in their characters, though they don't like to talk about it. "We have arguments about whether a character would do that. We believe them when we're watching the monitor."

Jerry Juhl denies that the puppeteers believe their characters exist, then adds, "Well, Frank may invite some of his characters to lunch once and a

"There are certain ones I love to do," says Jim Henson. "Link is so much fun. It undoubtedly has to do with the pompous side of myself. Also, Link is incredibly stupid, which is fun. He won't tell Piggy his real name, which is Mortimer. But every time she calls him Mort, he answers."

As a writer, Jerry Juhl re-fuses to talk about his favorite characters: "If I indicated a preference, I would have five puppeteers come up and rip off my kneecaps."

The monitors go on. Down-stairs, in the workshop, one of Henson's five children is learning how to make repairs. On stage. Henson is holding Kermit and sitting very still. He has put on a beaded headband. The monitor squawks:

"You know my husband weighs five tons."

"That sounds like a lot of bull.

"It is, darling, it is."

PEOPLE: To Renounce LLewellyn The Princess Reported

Princess Margaret, whose style disclose but not officially of living has aroused a national furor, will probably abandon her relationship with young socialite Roddy Liewellyn in order to continue her public life, it has been reported. British Press Association correspondent Grania Forbes, who has close contact with the royal family, reported that the 47-year-old sister of Queen Elizabeth has decided not to withdraw from public life and will resume public engagements as soon as she gets over a bout of the flu. Princess Margaret, making her first public appearance since coming down with the flu earlier this week, attended a state banquet Thursday night for UN Secretary-General Kurt Waldheim. Prime Minister James Callaghan and his wife were among the guests. Shortly before the banquet, Callaghan and Queen Elizabeth held their regular weekly meeting at Windsor Castle, just outside London. Political sources in London speculated that Callaghan intended to broach the subject of the adverse publicity stirred up by Princess Margaret's friendship with the 30-year-old Liewellyn. The content of the talk was not made public. A national opinion poll has reported that 73 per cent of the those queried think that the princess's life style is harming her standing as a princess and 57 per cent believe that she should make a choice between her royal duties and her friendship with Llewellyn, Miss Forbes said that the princess has decided not to withdraw from public life, as some of her critics have suggested. Her report quoted close friends of Margaret and Llewellyn as saying the decision means the princess will turn her back on the brewery heir and aspiring pop singer — at least publicly. Llewellyn's record producer, Tony Eyers, said Llewellyn was resting at his home in London. "Roddy is very distressed by the whole business," Eyers told reporters. "It's getting him down." Miss Forbes is the only British reporter allowed to cover Buckingham Palace on a daily ba-

sis and is frequently a conduit for news the royal family wishes to

A second obscenity trial of Hustler magazine owner Larry Flynt has been continued indefinitely in Ohio's Hamilton County Common Pleas Court. Judge Robert Kraft took the action after Flynt's attorney, Andrew Dennison, explained that an appeal is still pending and Flynt is paralyzed from last month's shooting in Atlanta. Flynt was convicted by a Hamilton County Common Pleas Court jury in February, 1977, on charges of pandering obscenity and engaging in organized crime. * * *

A misdemeanor marijuana charge against comedienne Judy Carne has been dismissed because a prosecution witness was on vacation and unable to testify against her. Los Angeles Municipal Court Judge George Zucker refused a request to delay the marijuana possession trial because of the deputy's absence. The charge was a misdemeanor. so it cannot be refiled, according to prosecutors.

A woman assumes her husband's surname as a matter of tradition "and little else" and is not required to do so, Maine's attorney general has ruled. In fact, Joseph Brennan said, a man has the right to take his wife's last name and both have the option of retaining their own names after marriage. "If a woman has the option of assuming her husband's name or retaining her own name, then the husband also must have the same option as to whether or not to assume his wife's surname," Brennan told Bureau of Vital Records Supervisor Marion Perkins. "The normal practice of the wife's assuming the husband's surname upon marriage is a matter of tradition and little else." Brennan ordered the bureau and town clerks to accept marriage certificate applications indicating the man would assume the wife's surname, the woman would take the man's last name or both were retaining their own

-SAMUEL JUSTICE.

To our readers:

Classified Advertising Categories

Herald Tribune classified ads are organized alphabetically by category for your convenience. This complete category list will help you find what you're looking for

Air Cargo America Calling Animals

Antiques Art Auto Rentals Anto Shipping Autos Tax Fre Business Opportunitie

Baggage Shipping Books Domestic Situatio Financial Investme

For Sale & Wanted **AMERICA CALLING** MESSAGES, APRIL 8, 1978

ANNOUNCEMENTS

GURDUSEFF'S TEACHINGS? for infor-motion write: BM Box 2,894, London WCIV 60X, England. U.S. TAX RETURNS by U.S. lowyer-CPA's. London: 6432462, Alhens: 6437905, Mednd: 4100153. SURL. N.Y. TBMES, jet Euro-delivery. Box 86, Medneten, Belgum. Tel.: (32-12) 37 M 452. VA in English daily, Pare, Tel: 551 38.90/325.75.00. TO SELL Offers, 6 oils, Generalic, Soto, Kimber Smith, Box 3855, 8-17, 103 Kingaway, London WCZ.

mountains for you...

43.85.30

Offices Wanted Real Estate for Sak Real Estate to Let/Share Real Estate Wanted/ Scripture Services Shopping Situations Wanted Stamps & Coins **AUTOMOBILES**

AUTO RENTALS \$20 PER DAY, unlimited mileage AUTOHANSA, Franzensbruecken St 8, Vienna, T.: 241694.

AUTO SHIPPING

Help Wanted,Domestic Holidays & Travel Legal Services
Low Cost Flights Moving Office Services Offices to Let Offices for Sale

case specials section from cars over-able.

1977 PORSCHE 924 C. Private sole.

10,600 miles, full U. S. specification, sun roof plus more extros. Call Ger-mony. 06121 - 37 26 98 or 06131 - 68 62 58.

POR SAUE CHEVROW. US Foonce plates. Call Paris: 225 65 23

"78 FORD CUSTOM VAN 351 V-8 one of a land beauty loaded w/extras. Air, sterea cassete, 2 surcois, port holes, sink, icebox, swivel captain's choirs. Lusury interior. Custom point, etc. etc. View call Munich 089-537584 Air. Buzby.

BRITISH MOTORS WRIGHT BROTHERS Monte-Carlo, direct factory dealer ROUL ROYCE and BENTICE. Tel. (PS 30.54.84. Telaze 470250 TEL. CO New 1978 models now in stock, olso splendid second hand car available.

SHIP YOUR CAR TO U.S.A. VIA ANT-WERP AND SAVE Free hold occom-moderion. Regular sailings JFK/McGure Airport delivery. AMESCO, Kribbestraat 2, Antwerp. Tel. 31 42 39. Office for Germany. tel.: 068-448071.

AUTOS TAX FREE

POR IMMEDIATE DELIVERY
New TAX-FREE Use
Codition + Mercedes
Range Rover + Blazer
Camaras + Trans Am
Caprice Convertible 1975
Peugeot 504, convertible, 1975
and other makes.
ICZKOVITS.
Coriclenstrasse 36, C1+8027 Zuric
Tel. 01/20276 10, Telex: 53444.

AUTO SHIPPING

BAGGAGE SHIPPING

BUSINESS OPPORTUNITES

COMPUTER PORTRAITS
On T-Shirts is the hot item this summer, instantly custom made. Operate downtown or or the beach. Secure delivery of your system now. Complete DM 47,270 with a prace/performance ratio second to none, Distributorships and openings for opents organists. Write:

ISIS & PARTINERS, RNC., Justimorshr. 22, D-6000 Frankfurt.

Swedsh parties to develop Sweden. Partner must be willing to work full kime running business in Sweden and invest a minimum of \$ 50,000.00. Boxt 3,846, HT, 103 Kingsway, Landon WCZ. Swiss international mover... wishes to move

CASINO interests for sole in Sporn, Tell Alicante 26 31 35 Spoin. DIAMONDS Fine diamonds in any price range of lowest wholesale prices direct from Antwerp. Full Guarantee. For free price list write. Diamontecoport Josephin Goldenstein. Established 1928, Millipagnisheet. 2000 April

just yodel... Got a complicated international We'll move mountains to see safely home. Heidl heidl ho... way to go,.. You interdean switzerland zurich 60.20.00 Other interdeen offices: Amsterdem 44 89.44 Athens 341.80 65 prociona 218 42.95 8 nm 65.09 57 Brennen 31 05.91 Brussele 259.54.0 Calro 4 12.51 Frankfurt (06190) 2001 London 951 4141 Long Seach 595.5511 Madrid 671.24.50 Milan 71 88.85 Munich 141 50.35 Naptes 738.12.88 New York 371.1760

CLASSIFIED ADVERTISEMENTS BUSINESS OPPORTUNITES

CLERKENWELL CAR EXPORTS LTD. Weekly saling to the U.S.A. of economical rates. 29 Gr. Sutton St., London ECI. Tel., (0)1 251 4979.
TRANSCAR 10 R. Pergolese, Paris Tel.: 500.4284, Madrid: 411.19.61, Antwerp: 33.99.85; Cannes: 39.43.44. UPON INSTRUCTIONS FROM THE PRINCIPALS OF SWANCLEAN SERVICES Rosans Auctions AN IMPORTANT SALE BY PUBLIC AUCTION ON THE PREMISES

SWAN LAUNDRY (NORWICH) LTD. HEIGHAM STREET, NORWICH, NORFOLK, ENGLAND

POWER LAUNDRY AND DRY E CLEANENG Florat and Machinery and related equipment, conteen & office furniture, etc. including a Daile Viking Barge Generator powered by Scanic, Vobr DS1 water cooled material dissel engine, Isolator & Dale control box, a Codrean Chieffain Package Offirmed Baller with Hamworthy Laurer, 7 Brecknell Dolman & Rogers marking machines (Polymork), 2 Spencer dry cleaning machines senior and major. Spencer Washer Hydro complete with auto control. 7 tornado 50-th dryers, 7 Broadbert Hydro, Weston Mathianse-ter Coat Unit Baler, Perkins & Jean Sever coat and collar presses, 2 Manisteres, 3 roller irosas madels 8,531 and 324, 2 Conveyor belts, lerge Cariffair qual pump, Bradly all tred baler, 9,000 gal cap. of storage tank, stoinless, steel waters, beling machines, workshop equipment, 2 Arlas Capco compressors, 4-ton tradley jack, water softening plant, lines inclies, birs, barrows, Factor Cotologues and details from: AUCTIONEERS, 144/150 LONDON ROAD, CROYDON, SURREY, Tel.: 01-688-1123/4/5.

SHOPPING CENTER central location 20 stores, 64000 sq.ft. Phoenix, Ari zono. Price: \$1.5 million, ½ down Earning 8% with growth potential P.O. Box 15532 Arcadia Post Office Phoenix, Arizona 85018, U.S.A.

GUARANTEED RETURN - Actute investors are buying committees in Sweet increas resourcially one of the world a strongest currences. Endowment and term popoles also avoidable from one of the foreigns swas Life insurance compones. Covernment regulated, white ladey for information and quotation without obligation, unite matter remnant comfidential. Golden Run, S.A., Avenue & Ouchy 14, 1006 Lausanne, Switzgerland.

DOMESTIC SITUATIONS EXCELENT REFERENCES, will relo-cate. Loves children. Mail governess and domestic work. English, French, Italian. Room, board and solary. American man, 27. Write Box 12662 Hendd Tribune, Paris. ENGLISH MUMS HELPS, Normies, free now. NASH Agency, 27 Grand Parade, Brighton, U.K. 1.281 868. **EDUCATION**

DIAMONDS

PREPARATORY SCHOOL

SPANISH COURSES IN MALAGA SPARN, oil grades, small groups, 4 hours daily, courses commencing each month. Living in Spanish families or small apartments. Wr.Centro de Estudios de Espanol, Ave. J.S. Elcono, 1100, Malaga.

DANCE CLASSES, ballet, modern, exercise. Call: Mr., Margan, Tel.: Foris, 267 32.90. or 754.96,73.

ESCORTS & GUIDES ESCORT GUIDE SERVICE

For well educated and offractive guides, Amsterdam, Tel. 247731, Telex 17178.

HUNGARY-1978 from Vienna to Budapest by bus from AS 890. IT Tours to Budapest by hydrofani, AS 1,860. Hotel reservations, viso procurement within 24 hours, viso procurement within 24 hours, Ask for detailed to rescribing COSMOS escort. Tel.: 57.687.65.

HUNGARY-1978 from Vienna to Budapest by hydrofani, AS 1,860. Hotel reservations, viso procurement within 24 hours, ask for detailed to rescribe the procure of the procurement within 24 hours, ask for detailed to rescribe the procurement within 24 hours, ask for detailed to rescribe the procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations, viso procurement within 24 hours, ask for detailed to reservations.

776.87.65.
VISITING LONDON? If you want to take out the most attractive and intelligent Excerts in town. Ring: 01-581-3490.

TUXEDO INT'L PARIS.

2072.14.15. to visit.

360.

TUXEDO INT'L - PARIS
Birguol Executive Status Escorts. Telephone. 261 27 26.

DECTING PARISAN PARTIES and enteresting night life. Call Paris S31.4972.

ESCORT INTERNATIONAL stringgal, well educated guides. Tel. Fors: 47 38.85.

BEAUTIFUL BILINGUIAL male & female Escorts, make Paris unforgetable. Tel.: 5074.69.

FOR YOUR ESCORT IN PARIS, call 500 7388.

LAST TANGO IN LONDON for friend-lest guides 01-987 7654.

LONDON ESCORTS, exclusive, very discreet. Tel.: UK. 01-402 7748.

ANGELICUE IN LONDON for a friendly guide. Tel.: 01-21 2248.

ELITE ESCORT IN PARIS Tel.: 542-43.04.

TOP LEVEL refined lody escort. Call Paris 255 33 68.

ROME For your escort call int'l Hostess 47 25 98 from 3 p. m.

FRIENDLY BILINGUIAL GUIDES in Paris Paris Escort 757 6951.

FOR YOUR ESCORT IN GENEVA.Call S3.13.88 and 96.97.01.

FOR SALE & WANTED FOR SALE : Poris, 531.78,41. cor rected number. American refrigerator washer, dryer, 220V, urgent.

HELP WANTED: DOMESTIC

TEHRAN/RAN, educated English specialing, serious mireded lady 27.35 required to fully supervise boy agad 14 of high renking fronten formly living, with his father. This is a responsible job and the successful applicant will preferably have had governess experience. High solary offered. Own room and bath. Write box 4580 Herold Tribune, Paris. All PABE Young professional family seeks. Scandinovian/Getman girl as Au Pair in New Hampshira, Must be good with infant. Return or fare, own room 6 solary for right girl. Interviews in Europe lain April. Send resume 8 photo los P. O. Box 4522, Manchester, N. H. 03108.

BUTLER AND CHEF/COOK USA. English speaking, obsolute professional used to domestic service. Valid working popers, and last references. CV/photo to Secretary, R. L. Holl, 306. Darmouth 5t, Boston, Mass. 02116.

HOUSEKEEPESE. Country Mome. HOUSEKEEPER: Country Hor room/both 2 odults, like entertaining Resume 8. solory to: Mayrsahn, Sparrow Circle, White Plans, N

HOLIDAYS & TRAVEL

PORTUGAL 7 DAYS INCLUSIVE TOURS FROM LONDON TO: SBON & ESTORIL..... OSTA VERDE (OPORTO)

FROM ZURICH TO: SON & ESTORE S.Fr. 819 COSTA VERDE (OPORTO): S.Fr. 819

TRAVEL AGENT

MOVING **ALLIED VAN LINES** INTERNATIONAL SOMEDAY EVERYONE
WILL WANT TO MOVE YOU
THE WAY WE DO,
IN THE MEANTIME CALL: FRANCE: DESPONDES S.A. Contoc: Mr. McGein, Tol. 272.35.16, 272.30.58, 887.57.40.
GERMANY: NTL MOVING SERVICES. Frankfurt, 0611-392-325. Munich, 089-8111069.

HOLIDAYS & TRAVEL

TABLE

CHARTER A YACHT IN GREECE DI
RECT from Owner of a fleet. VALEF

A. Themistodeous 22c, Promus, Tel.
45 29 571, Tx.: 212000.

NIGHT CLUBS

PARIS - Plezzi Mirobecu***NN, 10 Ave. E.-Zolo, 1-2-3 room flets, both latchen, fridge. 577.72.00. GERMANY FRANKFURT/ M-PARKHOTEL 14 d center, near railway sta T_0611/230571, Tx.; 04,12908.

GREAT BRITAIN GORE HOTTE, LONDON, Small exclusive hotel off Hyde Park, 10 minutes West End. All rooms with colour TV, bathroom, radio, telephone. Single: E13.50; twin £19.50. Tel. 584 6601. Teleax 894691 prefix GORE, 189 Gusen's Gode, London SW7. TUDOR HOTEL, 304 East 42nd Street, New York City. In fast-ioxoble, East Side Manhastan, holf block from UN. Single from \$22; doubles from \$30. Teleax 422751,

SWITZERLAND RESIDENCE DE FRANCE 4 Avenue de France.

4 Avenue de France.

7el.: 022/31.14.79,
uriful, first class, cur-condition
residential furnished appriment
studios. Fully equipped talch
daily maid service. Weekly
monthly arrangements. Excel

NEUCHATEL-HOTEL BEAULAC. by class. Beautiful location on the loke. Restaurant and terroces. Tel.: (138) 25.88.22. Teles: 35.122. LOW COST FLIGHTS International Revald Tribus carnot vouch for the reliability of the law cast flights advertised below.

RETURN FLIGHTS FROM EUROPE in Dutch Guiders for Line 1,549.

Noirob 1,075, Bengkok 1,275, New York 383, round the world 2,770 and oil other worldwide destinations, 588 TRAVE., P.O.B. 226, Tilburg, Holland, Tel. 1013, 42044.

AIR CHARTER SERVICES. ACGIS fracommended by embasses. J. Sincs 1969, 5 R d'Artos, Poris 8th. Tel. 523,02,15/523,02,16, orforonous. TRANSATLANTIC CHARTERS and other continents. Control: LT.S., 116 bis Ch. Elysses, Poris 8th. Tel. 225,12,39 or 399,59,13 office 444.

GLOBAL LOW COST AIR FARES. Sunshine Trovels. Tel. 242202. Sint Jorobistrop 42, Amsterdom.

OFFICE SERVICES YOUR OFFICE IN ROME. Mailbox, phone, telex, all business import/export, 0039/6/4755356. Extra Tall Sension 29 Merricula.

PENPALS FOR ALL AGES. Any country. Small fee required. For details Worldwide, CP-95x Anjou, Montreal Canada H1 k4G5.

PERSONNEL WANTED

LOGISTIC SUPERVISOR

experience in military supply. Procure ment and knowledge of military supply procedures is mandatory. Assignment will be in West-Germany. For turther information interested parties should send resume to: **AMECON**

5353 Mechernich, Bleiberg Koserne Postfoch 220-10, W. Germany or contact Mechernich Telephone 02443 - 2663. Highly successful U. S. Manufacturer of electronic aguipment in Germany invites applications from Cost accountants with experience in job of der cost systems on the position of MANAGER COST ACCOUNTING

ENGLISH TEACHER

INTERNATIONAL SECRETARIAL JOBS! LIFE INSURANCE AGENTS. Are you warried about devaluation if We teature the most existing sovings plan in America. You will receive higher connessions, liberal advances, stock options and participate in company profess on all pay grades. Sounds interesting if Write in confidence to Box: 12.6/6, Herdal Tribune, Paris.

Herold Tribune, Paris.

EIGCLITUS SECRETARY, required by international company, location Madrid, perfect Spanish, English, excellent sides, methodical, capable as assistant of derector general. Any no branchity contalying with requirement considered. Phone Madrid 279:38.07 or write. Box 119, Herold, Pedro Texeira B, Madrid 20, Spain. eira B. Madrid zu, 350m.
AGENTS - A prominent Swiss insurance
company seeks agents/brokers to of
fer amunités and life palcass abroad
Excellent services, generaus commir
sons, material in most kinguoges. Fo
certiculars, write to Globe Plan, S.A.

SWIZERGING or conditioning and refingeration specialist for American management team in South East Iron. Excellent solary, benefits, housing and 2 year contract, Interviews will be in Europe or Middle East, Reply to box 12686, Herold Tribune, Paris. 14000, Perdig Insure, rus a. WMMEDIATE OPENINGS IN American and Indi companies for English mother tangue secretaries and typists. Shorthand and knowledge of French desirable. EEC notionals or valid working papers. Paris 236 9749/9663.

PERSONNEL WANTED GOOD LOCKING guys and gals assoned the fun, fravel, & earn \$300/week as product demonstrators on US military bases, Europe. Rush resume & photo:
Box 12.624 Herold Tribuse Paris.
A TEACHER: Montessori troined and Brish (or similar) leachers cradentials needed for September 1978.
Write: Ave. Alforso 13, 34 Madrid 2, Spain.
ESCORT GUIDE billingual for jet-set level. Tel. Paris: 633.75.17.

REAL ESTATE FOR SALE FRENCH PROVINCES

VENCS-COTE D'AZUR, private sells es-tote + villa, 500 sg.m. + swimming pool, caretoter's house, sea view. Write to: Nr. 812 HAVAS, 06600 Antibos, France. GREECE

BKALL-ATHENS most exclusive suburb, old stone home, 2 bedrooms on 2.3 ocres garden. Tel. 5-8 p.m.: Athens 720.360. APRI: small villa in beautiful Anocom CAPRI: small villa in beautiful Anacapri, swimming pool, quest house, 2,300 sq. m. of gorden, U.S. \$ 200,000. Stor. 12,669; Herold Tribune, Paris. CIRCEO, LIDXIRY SEASIDE VILLA, 300 sq. m., 3 outbuildings, keeper's cottage, 5,800 sq. m. land, private beach, Line 400,000,000. Write: Planim , Viole delle Miliate 1, Rome or coll 04' 360,64.55. ROME VIA GREGORIÁNA in well fundem polace poortment, excellent for-

trown polace apartment, excellent commercial offices and high stand shop for sale. Write IN 158M, Impoli 110, Rome, Tel.: 8391251. PARIS & SUBURBS CHAMPS-ELYSEES HOTEL PARTICULIER

Small pond. Sunny inst: 180 sq.m. basement Garage. Sold directly by owner. HIGH PRICE.

FOCH

EXCEPTIONAL PLACE V. HUGO: private self; high class apportment, lexurious fitted 180 sq.m., 2 bashs, phone, porking. Agencies obstrain. Coll. 225.88.16.
MELIDON SELLEVIJE. 4-room fict; 100 sq. m. All comfort. Tel. 626 21 46 sq. m. All confort. Tel. 626 21 46
evenings.
NEAR MONIFORT LAMAURY: very
rice property, 250 eg.m. living space.
Fitted park, 12,200 sq.m., very rice
trees. Constater house. High price luttreed. Park: 586.06.23, 18 to 9 p.m.)
NOISY LE ROY residential. Las Charmilles, rice 4 bedroom house, 2 boths
+ 2 separate W.C., large converted
othc, living with fireplace, garage, Call
owner evenings and weekend 1
460.82.17, or during office hours:
950.69.54.

ISIANES, THERE ARE FOUR beautiful islands for sole in the Mediterranean, Also investment sins in Sordinia. Write: Agenza Immobilizer Parto Cervo, Ozoza Porto Gervo, Casta Smeralda, Sardinia, Tel.: (UT89) 92550. SPAIN FFTEENTH-CENTURY country police 37 kilometers from Madrid. \$200,000. Write Bax 116, Herald Tribune, Pedra Taxeira B, Madrid.

PLACE YOUR CLASSIFIED AD OR ENTER YOUR SUBSCRIPTION at our office nearest you

MOROCCO: Mr. R.a. Stagel,
2 Rue Murdoch, Cosobiomez.
(Tel: 27.36.83 or 22.00.90.)
NETHERIANDS: Mr. A. Gren,
Hobbemostroot 26, Amsterdom
1007. tel. 920-76 86 66/76 86 67
Tu.: 13133.
PORTUGAL: Mrs. Rica Ambor
28. Li.: b o n. {Tel.: 67.2793 8.
66224.}
SOUTH AFRICA: Mr. Robin A. AUSTRIA: Mr. McKum Whate, Bonicosse-9, Rm. 215, Vien-no 1. (Tel.: 63-84-06)
BELGIUM: Mr. Bill Franerty.
23 Ave. de la Toson-d'Or, Be. 12, 1060 Brussels, (Tel.: 513-5740)
BRITISH ISLES: Centract: Puris Office for subscriptions. For advertising only contact. Mcs. Susan McBryde, LH-I. 103 Kingswoy, London, W.C.2. Susan McBryde, I.H.T. 103
Kingsway, Landon, W.C.2.
(Tel: 242 693, Teles: 262,009.)
GERMANY: Contract: Partis
office for subscriptions. For ordivertising on ly contact.
Miss 1. Oethinger, I.H.T.
Grosse Eschenheimer Stresse
43, Frankfurt/Main. [Tel: 28.36 78. Teles: 46721, HT D.]
GREECE Mr. Jean-Claude
Rennesson, Pindorou 26.
Arbers. (Tel: 3618397.)
RAN: ARM. Mohmidd 12,
Bostom Street, Koarash Kaber Ave. Tehrom 15, Iron
Tel: 232908.
TIALY: Mr. Ansarus Sombrotis, 55 Via della Mercade,
00187 Rome. (Tel. 679.34-37.)
JAPAN: Mr. Todoshi Mon,
Media Sales Japon Inc., Doidia Mori Bullaing 1-12, 1chome, Nash-Shimboshi Minato-lau, Tokyo, Teles: 25666.
Tel: 501925,
UBBANON, STRIA 2 SORDANTrons Arab Media Advertising Management [TAMAM]
P.O. Box 688, Berrut, Homra,
Tel: 335252.

SOUTH ARRICA: Mr. Rober A. Hommond, Internotional Media Representatives, PO Box. 4,145, Johannesburg. 2000. Tel.: 22-0717. Telev: 8-013. SOUTH EAST ASIA: Mr. Christopher Chaney, C. Cheney & Ass., 1914 Asian House, 1 Hennessy Road, Hong Kong. Tel.: 5-281621 Telev: 75-353 Free HX.

SPARN: Alfredo Umlouff Scrumento. Pedro TEXairo 8, miento, Pedro TEXeira 8, Ibena Mart 1, Office 319, Madrid 20, Spain. Tel.: 455 33 06. Tbc.: 23357 MART E, 28.30.91
U.S.A. Mr. John Quigley,
International Herald Tribune,
444 Madison Ave., New York
10022 (Tel. (212 752.38)
FRANCE & OTHER COUNTRIES: 181 Ave. Charles-deGoulle, 72200 Neully-S/Saina.
Tel. 747-1245, Telex: 612832

REAL ESTATE FOR SALE

REAL ESTATE FOR SALE REAL ESTATE SOUTH SPAIN 4 % dis-count, Signature business loan \$ 5000 up. Raflex Box 63421 The Haque, Hol-land. U.S.A. REAL ESTATE U.S.A. KEAL ESTATE

Conservation of capital plus sofe and sure monthly income quality commercial free standing single tenant long term (20:30 years) obsolutely net leased land out building (General Eactric, K. MART, Woolworth, banks, etc.) with or without mortgages.

\$ 400,000 minimum cash up to \$ 50,000,000.

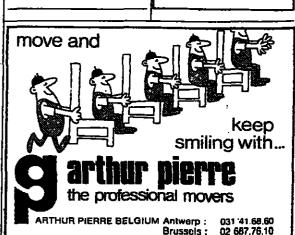
References Chemical Bank Please contact: WILLIAM K. LANGFAN

COMPANY, (Principal), 6 East 45th Str., New York, N.Y. 10017. SOMOSAGUAS (MADRED): wonderful occasion. Pot 4.550 sc. m. with beautiful view of Modred in exclusive subdivision. Write Box 118, Herold, Pedro Texero 8, Modrid, or phone 286,7478, Modrid.

SWITZERLAND

NEW CHALET in string & summer retort. 1½ hours Genevo, 5 rooms plus flat 2 rooms. 57*s. 310,000. Mortgage 5½% overlichte. Duc, 7 Scorth Rd, Lon-don SW13. Tel: 01-878-1857. U.S.A. CALIFORNIA FAMILY BEACH HOUSE FAMILY BEACH HOUSE
Radonds Beach near Las Angeles, Overtooloing Pacific Ocean, excess to sandy
beach. Split level, 7 bedroams, fiving
room, driving room, bifund room, kitchen, 2 car garage, terroce and garden. 5
240,000 freshold. Centact Gloss & Co.
Attorneys at Law, P.O. Box 2016,
Gardena, California 90247, Tel. 213
321-1152.

TURN TO PAGE 11 FOR MORE CLASSIFIEDS

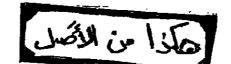


ARTHUR PIERRE FRANCE Paris: 969.68.95

STEENS INTERNATIONAL Rotterdam: 010-142342 The Hague: 070-399167

ARTHUR PIERRE U.K. Ltd London: 01/582.36.21





County

'Ppear

issed her

umes t

· a maile

te opuos.

Cooperation

Maney Consumer Countries Pool Their Research Efforts

whether sumer countries have not always project, which is to be carried out is will seen eye to eye on the political at Culham in Britain. If certain ald Burn issues, they have all recognized the commission proposals are visor by efforts. Centers of this collaboration of the collaboration of th vision Me efforts. Centers of this collabora-receiving similar amounts, while all practition are the European Economic the \$15 million custently being ming to Community in Brussels and the Inpon in ternational Energy Agency, which also be increased. dition at is situated within the buildings of The community

their on. The manner in which the two organizations operate is very differ-USTIC ent. In Brussels it is the Commis-grants to oil companies carrying sion that initiates projects, gets out seismics or exploration drilling them approved by the Council of in certain areas within the EEC.

Ministers and then administers

Thanks to the community's wo them. The funds come from the on nuclear safety at Ispar, world community budget and council approval must be unanimous. Invariabout the risks of conventional nu-

energy specialists. With money to spend and contracts to negotiate, it has contacts at both government and industrial levels.

its bureaucracy. It may take months of consultations with spe-14 3 cialists before the Commission staff prepares its proposals and the Commission has adopted them. There may be further delays while the proposals are being examined and eventually approved by the More months will pass while the tel Commission vets applicants for its grants and formalizes contracts. Every EEC country wants to have Marked its fair share of the cake and political considerations will often override technical ones.

More Flexible

The IEA system is much more flexible. Ideas for projects are de- IEA projects to around 30, with ties composed of government repre-sentatives. Each working party devotes itself to a specific energy area and its members meet on a regular

If interest is shown in an idea, ---- the government, or companies desgnated by the government, will ne-cotinte a deal in which only those TATE countries interested need partici-

Financing is provided by the parion ties to the contract. The role of the tending secretariat is therefore essentially a coordinating one and this is reflectnd by the small number of staff in-olved in organizing the R and D

The IEA system limits projects No. 186 ILLA System to those counties that are really interested in hem. The growing cost of R and D an be shared between countries without the frictions that often ocar in cooperative projects. However, the IEA's program is not on the ame scale as the EEC's and there s no attempt at a supranational

Whereas the EEC is a totally Eu-opean body, the agency includes ill the major Western countries, exspower. For 20 years this miracle of modern society had been waiting in the wings while oil and gas stole the lime members of the Common Warket in the IFA, there are no eccrets between the two capacitys.

EEC Budget

Within the EEC responsibilities are divided among different departments, and no official total for enrgy R and D expenditure is availthle. But it is reckoned that some

iames ale DARIS (IHT)—One of the more ried out at the community's ren has a positive consequences of the search establishment at Ispra. This husban oil crisis has been the growth of inown the ternational collaboration in energy must be research and development. If conmust be research and development at the same amounts to be carried out

The community's first response the Organization for Economic Control operation and Development in Parapplicance around \$200 million each year in ld assume energy R and D, while the IEA is far, the Commission has put up around \$200 million each year in last name about the same amount.

The manner in which the two controls is studied with the two controls. The manner in which the two controls is studied with the two controls in this control of the commission in the commission has put up around \$150 million towards the financing of the control of the control of the control of the control of the commission has put up around \$150 million towards the financing of the control of the commission has put up around \$150 million towards the financing of the control of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing of the commission has put up around \$150 million towards the financing the commission has put up around \$150 million towards the financing the commission has put up around \$150 million towards the financing the commission has put up around \$150 million towards the financing the commission has put up around \$150 million towards the financing the commission has put up around \$150 million t nancing of about 90 different projects in this sector. This year the out seismics or exploration drilling

Thanks to the community's work ably there is a certain amount of clear plants. The Commission is horsetrading.

To run such a large program, the of fast breeders and high-temperature reactors.

Research in coal and alternative energies has so far stood at little The great weakness of the EEC is more than \$15 million each but proposals due to be put before the could result in a further \$50 million being made available for R and D in geothermal, coal gasification and in geometrical, coal gashication and liquefaction, energy savings and solar power. As of now, the major work in new energies included a project in solar power with the decision to build a power plant in Sicily, a joint hydrogen project with the IEA and a geothermal undertaking with a new drilling technique being developed in West

Germany.
The signing in Tokyo this month of two new cooperation agreements concerning wave power and biomass has brought the number of veloped within special working par- participants putting in more than (Continued on Page 9)

Published with The New York Times and The Washington Post

PARIS, APRIL, 1978

ENERGY TECHNOLOGY

Development Programs Pursued Worldwide

By Michael Parrott

PARIS (IHT)— When the oil crisis broke out five years ago, the first reaction of the Western countries was to call the bluff of the oil producers. Characteristic of the time were the optimistic energy assessments of the Hudson Institute, the confident tone of President Nixon's Project Independence and the statements of U.S. Treasury Secretary William Simon. The idea of the consumer countries was to bring down world

oil prices through a crash program of indigenous energy development.

A glance at "Energy Prospects to 1985" published by the Organization for Economic Cooperation and Development in 1975 shows how confident its members were that they could turn the tables on the oil producers. The quintupling of oil prices alone was expected to reduce the dependence of OECD countries on energy imports in 1985 to 21 percent compared to 36 percent in 1972. With special government efforts to boost oil and gas production, OECD countries could virtually become self-sufficient, the

The same optimism was expressed in another OECD report called "Energy R and D" published later in the same year. "For oil prices of between \$4 and \$6 or even \$7 per barrel (in 1973 terms), technology could open up new oil and other fossil-fuel sources which are big enough to greatly modify the entire energy situation and which were financially and technologically out of range before 1973," it claimed.

Five Years Later

Yet five years after the oil crisis, the United States is still unable to push through an energy policy; and the International Energy Agency, set up especially to coordinate the policies of the consumer countries, is predicting that the OECD countries will produce less energy in 1985 than had been anticipated on the basis of pre-crisis prices. Governments are hesitat-ing to make the enormous investments required and energy producers

argue that the oil price is still not high enough to justify investments in

ew energy sources. In its "Energy R and D" report, the OECD claimed oil from Alaska and the North Sea would be available in 1980 at \$1.25 to \$1.50 a barrel. oil found in waters 300 to 400 meters deep at \$4 and deep-sea oil for \$5 to \$8 (all in 1973 terms). Additional costs for secondary and tertiary recovery would be 25 cents to \$1.50. Among the more unconventional oil sourctar sands were expected to yield oil at \$4 a barrel, shale oil between \$3 and \$7, low-grade coal gas could be produced for \$3 to \$4, solvent refuned coal at \$5 to \$7 and high-grade synthetic natural gas (\$NG) at \$8.

Now the oil companies claim oil from the North Sea and Alaska costs

between \$5 and \$8 and that deeper fields may cost \$12 or more. The manufacture of low-grade coal gas is reckoned to be unexon the \$12 range, of tar sands below \$17 or so, of SNG below \$23, shale and the new energies \$25 or more. Yet from all sides come warnings of an

nergy crunch in 1990. The OECD's cost figures in 1973 terms would have to be increased by almost half if they were to be translated into today's dollars. Even so, the differential with current price estimates needs explaining, especially as the "Energy R and D" report benefited from the advice of 13 eminent energy experts and was approved by all 24 OECD members.

For a Ride

Amid all these claims and counterclaims, the public is beginning to wonder whether it is not being taken for a ride. Is this a real crisis or is it just a phony war? Is the development of these new sources really too expensive or are the energy companies just 100 greedy for profits? Can technology come up with new energies or must we reconcile ourselves to a deteriorating energy situation?

To some extent the escalation of development costs was predictable. As the OECD report said at the time, "The simultaneous demand of many companies for the same resources might lead to unexpected bottlenecks delays and higher construction costs." But who would have imagined the increases in the construction costs of offshore platforms, nuclear power stations and pipelines?

What nobody expected was the strange combination of high inflation and negative growth that characterized Western economies just after the oil crisis. Governments with budget deficits and unemployment problems thought twice about financing major energy projects or increasing energy prices. Tighter credit controls drove up borrowing costs and tighter figur-dity made it increasingly difficult for companies to cover my estments. The slowing down of electricity demand affected expansion plans by utilities.

And investment costs were increased by environmental objections, planning procedures and delivery delays.

Returns

Also holding up energy development is the reluctance of companies to accept a normal rate of return on what they consider to be a risky investment. According to M.L. Scharrah, R and D director for the U.S. company Conoco (Continental Oil Co.), a major factor in the the recent increase in costs has been the insistence of energy investors on obtaining a 15percent return on their capital instead of the normal 8 percent. With depreciation and financing costs representing as much as 60 to 70 percent of a project, this can push its costs up from \$15 a harrel to \$25.

An added uncertainty is the recent easing of the international oil price in real terms. Due to the slower growth of oil consumption, the arrival of oil from Alaska and the North Sea and the depreciation of the dollar itself, this price decline makes development projects even less attractive. Already unhappy about the viability of some of their fields, the oil companies are hardly going to push prices down further by opening up new

If the consumer countries have done much less in energy development than originally expected, they have not been completely idle. In one country after another, special energy programs have been drawn up, new energy institutions established and research intensified. Significantly, only five years after the oil crisis, the energy research and development programs of the European Economic Community, the IEA and individual governments are really getting underway.

Progress

During the last five years, the oil industry has learned how to tackle the rough conditions of the North Sea and Alaska and develop its capabilities in deeper waters. The gas industry is mastering the technology of liquid natural gas (LNG) plants, tankers and sub-sea pipelines. The nuclear industry has come of age with its large-scale production of conventional reactors and new life has come to the coal industry.

If most alternative energies remain uneconomical at present prices, the use of waste heat from power stations is winning increasing support, coal gasification is on the verge of becoming commercial and solar power is proving more promising than was once thought. As the market prices of energy rise, attitudes towards energy are changing and consumption hab-

its are quietly altering within the home and industry.

Most important of all, this period has given governments the opportunity to weigh the policy options open to them. Instead of rushing into crash programs that might have produced energy that was not needed, at financial and environmental costs that might have been regretted, countries have had time to choose the sort of sacrifices they are prepared to make, the energies they want to develop and the technologies that are most

Amory Lovins of the Friends of the Earth movement argues that a choice must be made between conventional centralized energy development based on the development of coal, oil, gas and nuclear energy, and a non-nuclear decentralized path based on soft energies and what he calls technical fixes. The one policy is geared to multibillion dollar investments carried out by giant corporations, the other to a more careful analysis of energy demand and its satisfaction by a whole range of smaller companies offering their services in different energy areas. Just as the economy itself is made up of large units and small family firms, it should be possible to include both approaches in a national policy.



Tugboats tow the world's largest concrete oil platform to the North Sea.

Breakthrough Still Awaited for Tapping Old and New Sources

PARIS (IHT)—Necessity is the I mother of invention, the Greeks claimed. Yet five years after the energy crisis, it is difficult to

nas not been noused.

But technologies which were merely at the laboratory stage before the cilicists are now almost ready to be commercialized. Indications the commercialized and carried to be commercialized. tions are that all the energy companies are waiting for is a further increase in oil prices.

companies seem no nearer to the exploitation of tar sands and shale than they were five years ago. They have made impressive advances in the energy crisis, it is difficult to pinpoint any major breakthrough have made impressive advances in offshore technology. If there has been a Newton or an Einstein, he there have been nothing more than the realization of ideas that existed the realization of ideas that existed

> In the nuclear field, too, it has been a matter of consolidation

pressures, they are being forced to insure greater safety standards than would ever be met in traditional industries. As opposition to nuclear programs grow, research has con-centrated increasingly on the problems of proliferation and waste

The decline in natural gas pro-

In the hydrocarbon field, oil rather than innovation. As nuclear duction in the United States has intensified research into the technology of gas liquefaction and coal gasi-fication. Although much of the progress has so far been made in the techniques of gas liquefaction and transportation, second-genera-tion gasification techniques being developed in the United States may soon become economically viable West Germany and Britain remain strong in this field, although Britain's interest has become largely ac-ademic since the arrival of North

For a country like South Africa, less polluting fluidized bed com-coal liquefaction may be interest-ing, but for other countries, there are still many cheaper ways of producing oil.

People are still waiting for the comeback of the coal industry. The development of U.S. production has been hampered by environmentalist problems and a slackening demand for the utilities; produc-tion in Europe has been slowed by increased costs. There are great hopes for the more efficient and

es, there have been few technologi-cal developments in geothermal power, ocean thermal gradients. ocean currents or biomass. Wind and wave technologies are beginning to attract serious support from some governments.

The most spectacular developments have come from solar energy. Who would have guessed five years ago that the Europeans would be switching to solar water heating, that Third World countries would be adopting solar-powered water pumps and that electricity from photovoltaics would only cost 10 limes more than conventional pow-

At the same time, there have been important developments in electrical and gas-driven heat pumps, in storage and transmission techniques and in insulation mate-

— Nuciear ·

ions. The EEC participates in vari-sus IEA projects as a participant in raised over its safety, then about its ts own right-namely in three cost, now over proliferation and usion projects, hydrogen produc-ion, and solar heating and cooling in 1975 the Organization for Economic Cooperation and Develop- ity. ment was confidently predicting that nuclear power would represent some 756 million tons of oil equiva-

be available at that date. 5000 million are spent each year—some 60 percent of the whole community R and D budget.

Until now, the largest item has been research on nuclear safety cartenial from ultimately recoverable Nuclear power had seemed the

lent in 1985 compared to 35 million

in 1972, it is now virtually certain

that no more than 400 million will

DARIS (IHT)—When the energy crisis broke in 1973, the stage times as important as existing oil seemed set for the arrival of nuclear power. For 20 years this miracle of would only come with fast-breeder reactors. With conventional reactors alone, uranium resources would be worth less than half of ultimately recoverable gas reserves, it was claimed.

"If we bring in fast breeders, our current stock of some 20,000 tons of uranium 238 are worth more than all Britain's oil, gas and coal resources put together," says Dr. Walter Marshall, deputy chairman of the U.K. Atomic Energy Author-

Poor Performance

Nuclear's poor performance is all the more surprising in that most of the technical problems associated with conventional reactors had been solved, the choice of systems had been made, the industrial in-frastructure established and the economic viability confirmed. What nuclear supporters had not

(Continued on Page 2)

Cooling towers dominate skyline at nuclear center in Bugey, France.

ONDON (IHT)-Only a decade after toppling coal as the world's major fuel, oil is finding that its days are already numbered. According to the Workshop on Alternative Energy Strategies. proven oil reserves now total only 658 billion barrels while ultimately recoverable reserves come to around 2,000 billion. U.S. oil pro-duction is already on the decline, and world production may follow suit in as little as 15 years.

For the consumer countries who have so recently switched to oil from coal, these estimates are disturbing. Not only is the West concerned over the growing dependence of consumer nations on a lew Middle Eastern states, but the prospect of world oil reserves running out altogether is also a major wor-

If the oil industry had stuck to its traditional enshore production, the prospects might have been even bleaker. But in the early 1960swhen the Middle East fields were still under the control of the majors

and oil prices were at rock-hottom levels—the oil companies turned their attention to the offshore, where as much as 45 percent of the world's ultimately recoverable oil reserves are believed to lie. It was this decision that sparked off a major revolution in the technologies used by the oil industry.

When the U.S. companies began exploring in the shallow waters of the Gulf of Mexico just after the war, they merely transferred their onshore production methods to the sea. But as soon as oil and gas were discovered in the rougher conditions of the North Sea, traditional techniques had to be abandoned. Up to that time the U.S. companies had dominated the field, but with the North Sea discoveries, European companies started making important contributions.

In the exploration field fixed platforms had to be abandoned in favor of floating ones. The first was a semi-submersible platform an-

(Continued on Page 4)



The Role Nuclear Will Play in the Future Is the Key Question

reckoned on was the slump in electricity demand during the recession, the financial difficulties of the utilities at a time of soaring building costs, the growing environmen-talist opposition and the election of

President Jimmy Carter. When nuclear technology was first developed after the war, countries adopted systems that suited tors—either pressurized or boiling are currently building a large gase-models. Canada, with expertise in heavy water, developed the Candu trifuge will encourage proliferation. reactor operating on natural arani-um and cooled by heavy water. France and Britain chose the graphite-gas route using natural nium for a bomb in three days, uranium and gas cooling. When uranium and gas cooling. When France acquired enrichment capabilities, it followed the example of West Germany and adopted light-water technology, while Britain merely incorporated enriched uranium in a development of its existing reactors—the advanced gas-cooled reactor (AGR). After experiencing considerable difficulties with the AGRs, Britain plumped for a mixture of the Candu system with a light-water boiling reactor, called a steam-generating heavy water reactor (SGHWR).

By 1973 it was already clear that light-water technology would be the system generally adopted for conventional reactors, with the United States, West Germany and France all possessing the industrial capacity to supply this type of reactor system. By 1978 the pressurized version licensed by Westinghouse seemed to be gaining ground over the boiling-water version of Gener-

Next Stage

If the problems with light-water reactors were only industrial, the same could not be said of the fuel cycle as a whole or of the next stage nuclear development. Gaseous diffusion was still the only uranium enrichment process working, while no commercial reprocessing facili-ties were yet available. High temperature gas-cooled reactors and breeders were still in the experi-

The United States has just

by the West Germans, Dutch and British; South Africa and West Germany have brought out "jet nozzle" systems; the Americans are working on a new enrichment process involving the use of laser beams, while the French have presented what they claim to be a proliferation-free chemical route

Whereas the gaseous diffusion system involves large investments their respective resources and tech-nologies. The United States, with a centrifuge can be built in smaller monopoly in enriched-uranium units with much lower energy facilities, opted for light-water reac-requirements. But the French, who trifuge will encourage proliferation.

take three weeks, with the gaseous-

Reprocessing technology has been understood for years, but France is the only country that ac-tually has a commercial plant in operation. As their contribution to the non-proliferation battle, British and U.S. scientists have just suggested a reprocessing technique that would leave some dangerous fissile products in the plutonium to prevent it from falling into undesir-

In 1973 it looked as if high-temperature, gas-cooled reactors, using a mixture of highly enriched urani-um and thorium as fuel, might soon become commercial. Operating at temperatures of around 950 degrees Celsius, these reactors would have offered valuable heat for industrial purposes such as coal gasification

as 90 percent would have been burned with thorium to produce the fissile uranium 233.

But the bottom fell out of the market when U.S. utilities cancelled all their orders from General Atomics, and concern has since been expressed at the proliferation implications of these reactors. West Germany is now the only country that still attaches considerable importance to this technique: It is currently planning to build a combined reactor/coal-gasification complex in northern Germany.

But the fast breeder may well be the first to pass the finishing post. President Carter has, of course, expressed reservations about the breeder as part of his non-proliferation stand, Britain still hesitates over moving to a commercial unit and West Germany has yet to pass research has gone into ways of re-

being more efficient in the genera-tion of electricity. Under this sys-tem uranium enriched to as much fast breeder of liquid metal. Superfast breeder of liquid metal. Super-phenix, which is due to come into service in the early 1980s. Fueled by a mixture of plutonium and uranium 238, it will be built in south-

> Alternative breeder technologies have also been examined, especially in the United States. With its experience in gas-cooled, high-temperature reactors, it is hardly surprising that General Atomics should have been examining a breeder version using the plutonium fuel cycle. In the belief that uranium 233 is less dangerous than plutonium, the U.S. administration has been looking into light-water and molten-salt breeders based on the thorium cycle. But it looks increasingly as if the liquid-metal system based on pintonium and uranium 238 will win the day.

ducing the proliferation dangers of nuclear power. The French have come up with their chemical granium-enrichment system, British and American scientists with a safer reprocessing technique and the United States has been examining the thorium as opposed to the plu-tonium cycle. Yet many people in the industry wonder whether it is really possible to prevent proliferation once the nuclear business takes

Highly enriched uranium, plutonium and uranium 233 can all make bombs. Light-water reactors use only slightly enriched uranium, but the spent fuel includes plutonium, even if it is unusable until it has been extracted through reprocessing. Breeders using thorium instead of uranium 238 may produce little plutonium, but they manufacture uranium 233. By restricting sales of enrichment, reprocessing and breeding plants, proliferation

Complicated

Exploiting dry and wet steam is a

more complicated business. Not only may the steam have a high sal-

inity content resulting in the corro-

it can be prevented. If a country wants to produce nuclear it has much easier ways of manufacturing the fissile materials than using equipment built for civilian nuclear programs.

Waste Disposal

The waste disposal question must, however, be solved if future generations are not to be endan-gered. With no viable techniques yet developed to store spent fuels from reactors, many people believe reprocessing is not only more eco-nomical, but safer. Once the uranium and plutonium have been extracted from the spent fuel, the radioactive material left takes up so little room that it can easily be incorporated into glass cubes, inserted into huge concrete blocks and buried in granite rocks, clay or salt deposits. The real threat to future generations may well come from

no around the world. Further shead is the energy potential of fusion as opposed to lis-sion. Based on the principle of the hydrogen bomb, fusion is created, by bringing together the hydrogen isotopes of deuterium and trium at 100 million degrees Celsius, Degree terium is freely available in season

ter and tritium can be made frome

relatively uncommon mineral, lithi-

um; but the process of maintain

fuel-including highly radioactive, clements—that is beginning to high

fusion at such temperatures is ver difficult.
The problems involved are greater than those faced in putting a man on the moon," says Niels de Terra, of the International France, "But if they are solved, the world will obtain a virtually limit.

less source of energy." Two methods are being explored to attain fusion-magnetic contain ment and fusion by laser. Under the first approach hot gases are contained within a doughnut shaped device called the Tokamak by a magnetic field. Schemes of this kind are currently being pursued in the United States, Japan and the European Economic Commi Under the second method, being tried in the United States, deuter um-tritium pellets are bombarde by laser beams.

Hardware

The IEA is sponsoring two multimillion dollar hardware projects in the field of magnetic confin fusion research. One, which is being carried out in the United States, is designed to develop matevery extreme fusion temperatures the other, which is taking place in West Germany, is trying to develop superconductor magnets of a size never before attempted. Only recently Britain was chosen to carry out the JET fusion experiments that are being financed by the FFC

Fusion is still very much a dream in the minds of scientists, but finsion is very much a reality. Antinuclear forces may have a case when they argue that the world's energy needs could be met without nuclear power, but others feel that their arguments may have come a little late in the game. For good or for ill. Pandora's box has been _M.P. opened. —М.Р.

Tapping Geothermal Power: Complicated, Expensive

Power is mentioned, most peothe form of warm water as opposed
ple immediately think of hot-water to electricity generation. Among geysers in Iceland, of the dry steam the areas enjoying geothermal pow-fields in California and nothern Italv or the hot brines found in New Zealand. But what is not generally realized is that geothermal energy can be found everywhere under the States. earth's crust, provided one goes deep enough.

As a general rule, the earth becomes warmer by one degree Celsius for every 30 meters penetrated below the surface. So a depth of 3,000 meters is needed in order to obtain water warm enough for district heating.

However, there are many areas in the world where such temperatures can be found much nearer the surface. Volcanic regions like Ice-land are the most obvious sites, but there are many lesser-known areas where the exploitation of geother-mal power should be possible. According to a United Nations study, world geothermal reserves may be as much as 7,000 billion tons of oil

adopted the revolutionary high-speed centrifuge system developed than 6,000 megawatts of this power exploited.

DARIS (IHT)—When geothermal is being tapped, 80 percent of it in Italy, the Paris region in France, New Zealand, Japan, Siberia, Chile and the West Coast of the United

> There are two main types of geothermal reservoir-those of low temperatures varying from 60 to 120 degrees Celsius which can be found at between 1,500 and 2,000 meters in sedimentary basins; and those of high temperatures varying between 200 and 350 degrees Celsius located in depths of a few hundred to several thousand meters in areas of relatively high volcanic or tectonic activity.

Hot Rocks

While the former, appearing in the form of hot water, can be used only to heat homes or greenhouses, the latter, in the form of either dry steam, wet steam or hot rocks, can also be used for generating electricity. Hot rocks exist everywhere, but it is only in some areas that they But for the moment little more are near enough to the surface to be

The areas most suitable for geothermal applications have already been exploited...And the exploitation of the hot rocks remains far too expensive for consideration in the short

Hungary, France and the Soviet Union. Paris, for example, is sitting on a huge reservoir of low-temperature water. Europe's spas are no more than geothermal fields.

High-temperature geothermal can be found in the form of dry steam at Larderello in northern Italy, at Valle Caldera in New Mexico and at the geysers in California. and in the form of wet steam or hot brine at Wairakei, New Zealand, at course, be found everywhere, but sumption centers and there are lim-

Low-temperature geothermal only in some areas such as Stuttgart power is to be found in Iceland, are they close enough to the surface are they close enough to the surface

to be exploited. The use of hot-water springs for homes poses few problems except for the installation of piping to the houses and the corrosion caused by the salinity of some of these waters. In countries prepared to invest in a pipeline network to carry residual heat from power stations, factories and waste processing plants, water heated geothermally could easily be incorporated into the system. How-Imperial Valley, Calif. and El ever, such low-temperature reser-Tatio, Chile. Hot rocks can, of voirs are often far from major con-

sion of equipment, but it also includes umpleasant hydrogen-sulfide emissions.

When used for electricity genera-tion, as at Larderello, the California geysers and at Wairakei, efficiency is only about 15 percent and waste is therefore much higher than with a conventional power plant. At Imperial Valley, the corrosion problem is being solved by transferring the heat of the brine to another liquid such as isobutane through a heat exchanger made of special non-corrosive alloys and then reinjecting the brine into the

The exploitation of hot rocks poses major technological problems and remains uneconomic. At Los Alamos in the United States attempts have been made to extract heat from dry rocks by the hydrofracturing techniques developed

water can be transported without drilled into the rocks, pressurized water is injected into one of them and, if a suitable connecting crack can be found, heated water or steam should then come up the

> Another technique is being tried out at Urach, near Stuttgart, with the support of the European Eco-nomic Community. Under this method only one hole is drilled, into which two insulated tubes are inserted. Pressurized water is injected into the one and heated water or steam should then come out of the

The areas most suitable for

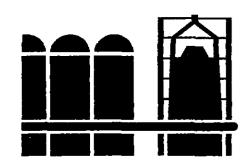
geothermal applications have already been exploited. Development of hot-water pipeline networks based on waste heat from power stations could make new geothermal reservoirs economic, but their distance from major consumption centers will remain a problem. The use of geothermal power for electricity generation is economic only in favorable conditions such as at Larderello or the California geysers. And the exploitation of the hot rocks remains far too expensive for consideration in the short term.

Plant and Systems

Internationally, Demag are one of the technical leaders in the field of mechanical engineering and plant construction.

31 production shops and more than 300 offices ensure fully comprehensive service and consultation facilities to our customers all over the world.

For further information: DEMAG Aktiengesellschaft, D-4100 Duisburg 1, Federal Republic of Germany, Telephone: Germany-203-605-2413.



Metallurgical Plant and Equipment

Machinery and systems for the iron and steel industry from ore beneficiation to semi-finished product. Complete plant.



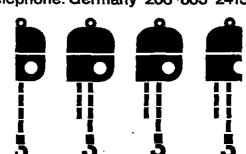
Rolling Mill Technology Rolling mills for beams, sections and wire-rod; strip and sheet mills.



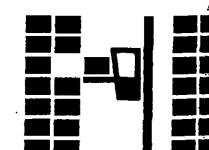
Tube and Pipe Making Facilities Plant and machinery for the production of seamless and welded tubes. Hydraulic presses.



Cranes and Lifting Gear Overhead cranes, suspension cranes steel mill cranes, KBK (modular crane construction) and suspension track

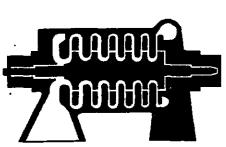


Components Drive engineering and control systems. electric lifting gear, standard crane components and load lifting attachments.



Distribution Engineering Handling systems, high-bay warehouses, storage and distribution systems. Complete planning and turnkey

construction.



Compressors Centrifugal compressors or positive displacement machines for air, gases and gas mixtures.



Compressed Air Systems Compressors, pneumatic tools and equipment for the building trade and industry in general. Compressed air



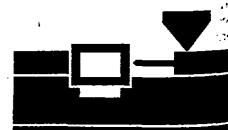
Mining and Tunnelling Mining and tunnelling machines for hard and soft rock. Air motors.



Bulk Materials Handling Bucket-wheel excavators and stackerreclaimers for handling or rehandling ore, coal, oil sand and minerals



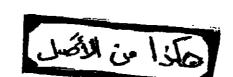
Construction Equipment Hydraulic excavators up to 109 t. mobile cranes up to 500 t, road finishers and rollers.



Piastics Machinery Complete plant and machines for injection moulding and extrusion.









Solar Power: Major Impact Unlikely Before Turn of Century

being used increasingly to heat homes. In the Third World solarpowered water pumps are giving new hope to farmers in arid West Africa. Solar power is becoming a

Earlier this year the U.S. government agreed to fund a 360-megawatt electricity generator-cum-heat-er based on photovoltaic cells to be used in a school in Arkansas. It will be the biggest plant of its kind ever built, and solar cells and concentrators supplied by Solarex will only cost \$6 a watt. Five years ago the largest photovoltaic generator was no more than a few kilowatts and the cells were costing as much as \$100. Now Motorola is reported to be supplying cells for an even larger unit at only \$5 a watt. It is the transistor revolution all over again.

It is the same story when it comes to thermal electricity generaors based on solar power. The Euopean Economic Community is unding a megawatt central tower lant in Sicily. The International inergy Agency is sponsoring two 00-kilowatt units in Spain—one sing the tower concept, the other a arabolic trough or distributed sysm. The United States is financing 10-megawatt tower unit in Barlow, Calif. The Sicily plant is exected to produce electricity at litemore than \$7 a watt.

Competitive

With the two systems running ck and neck, it may be only a hatter of years before solar-based lectricity becomes competitive oth that produced from fossil hels. Electricity production costs tith thermal generators are not ex-exceed to fall much below \$2, but .S. companies reckon that by the ciddle 1980s solar cells could be testing as little as 50 cents.

lould put photovoltaics in the

meet more than 5 percent of U.S. energy needs, and 3 percent of those of the Common Market countries.

Solar power may be economically viable for water heating and swimming pools, but only in new installations. Third World countries without national electricity grids may be attracted by the lowcapital costs of solar power, but their purchasing power remains limited. For space heating and electricity generation the sun is still not an economic proposition.

"It is now economic to install solar water heating," says Albert Strub, research director on alterna-tive energies at the EEC. But when it comes to space heating, many countries feel the money would be better spent on better insulation rather than on solar equipment."

Greatest Promise

Of all energy sources, however, the sun holds the greatest promise. Wind and water are, after all, the result of the sun's rays; wood and crops are nothing but short-term energy carriers; fossil-fuels are so-lar energy stored over the centuries. Rather than extract this energy indirectly, why not tap it directly?

So long as no solution has been found to the transmission of electricity over long distances, the idea of using the Sahara or the Arabian desert as the world's energy source must remain a pipe dream. The problem of widespread use of solar within consumer countries concerns the environmental impact as much as its cost. But in countries that are sparsely populated and have yet to develop national energy networks, solar power could well be

Solar power can either be used d"Even when the other capital directly, essentially for heating pur-wsts are taken into account, this poses, or indirectly for producing electricity. When used directly, two time range as conventional gener- systems can be used—the flat-plate sing methods," says Wolfgang collector or the focusing collector. uz, who specializes in solar enerwat the EEC Commission. "At the either be from steam created by the doment electricity produced by above-mentioned systems or directanventional methods costs be- ly through photovoltaic cells. Of lieen 50 cents and a dollar per the three main systems, the flat plate and photovoltaics absorb the bYet it is only the environmental- sun's radiation as a whole, while os who believe that solar energy the focusing collector achieves

Although there is a considerable difference in the amount of direct shine received in various parts of the world, the amount of solar radiation as a whole varies appreciably only in the winter. Flat collec-tors and photovoltaics are therefore more efficient in northern climates than is generally thought, but un-fortunately their output is lowest at the very time when they are needed

The simplest example of the direct use of the sun's rays is the greenhouse. By using a black-plated collecting plate underneath glass—the so-called flat-plate collector—it is possible to achieve temperatures of 50 to 70 degrees Celsius. With more sophisticated techniques such as vacuums and metal coatings, temperatures of as high as 250 C. can be attained. Flat-plate collectors can be used either directly for heating or indirectly for electricity generation. Electricity with this system costs about \$12 a watt, Mr. Palz claims.

Solar-focusing collectors were developed to maximize the heat from the sun's rays. They come in two forms—the central-receiver system and the linear- focusing or distributive-collector system. In the first, mirrors focus the sun's rays on a central boiler. In the second, they concentrate them on pipes containing liquid or gas.

Two Variants

There are two variants of the central-receiver system, the paraboloid concentrator and the central tower. Under the first, a paraboloid mirror of some 50 square meters tracks the sun, producing temperatures of around 500 degrees Celsius at its focal point. An example of such a plant can be found in Marscilles, while a larger version with fixed mirrors has been built at Font Romeu in the Pyrenees with temperatures reaching 3,500 to 4,000 C. Under the central-tower system, a number of rotating flat mirrors, or heliostats, are focused on a sepa-rate fixed boiler. Plants of this kind are being built in Sicily, Spain and France

There are also two variants of the linear-focusing or distributive-col-

bolic trough onto pipes containing liquid or gas. An example of this system is to be installed in New Mexico for irrigation purposes, and a 500-kilowatt unit is due to be built in Spain under an IEA pro-gram. Under the second method, faceted flat-mirror segments reflect the sun's rays onto a pipeline sys-tem. The best example is a 360-ki-lowatt unit that stands in Marseilles. Under the central-receiver system, the apparatus must be ca-pable of tracking the sun both hori-

zontally and vertically, while in the simpler linear-focusing system it needs only to move vertically. The most exciting developments

BRUSSELS (IHT)—In Europe can play an appreciable role before the next century. Even by the year are turning to solar water heating.

In the United States the sun is meet more than 5 percent of U.S.

BRUSSELS (IHT)—In Europe can play an appreciable role before the next century. Even by the year ing exclusively on the sun's rays.

Differences

Differences

Differences

Sun's rays are reflected from a parabolic trough onto pipes contaming liquid or gas. An example of this system is to be installed in New the most promising semi-conduction. The most promising semi-conduc-tor material is silicon, which has attained efficiencies of 17 to 19 percent. Better suited for higher temperatures are gallium arsenide cells, which can obtain energy conversions of 13 percent. But the real breakthrough could come with cadmium sulfide. Although this material currently only offers efficiently only of cies of little more than 5 percent, really caught on and distillation manufactured as a film on a conventional "float-glass" production line, it could become as cheap as used for air cooling and crop

For the moment the main de-

collectors, be it for thermal uses or for electricity generation. Water heaters based on this system have been operating in Japan, Israel and the United States for years. Now they are being introduced in Europe. Prices are still high at \$1,000, but they are falling fast. In sunnier countries collectors are used for space heating with a con-ventional back-up. In the develop-ing countries solar cookers never cases, but the sun's rays are already

lighting, generators are required. Some of these are based on flatplate collectors like the water pumps sold in West Africa by France's Sofretes or the same company's 25-kilowatt electric vater-supply system for a town in Mexico. Photovoltaics are, however, also used as in Niger, where school children can watch televi-sion thanks to sets powered by pho-tovoltaic cells. Many people believe that photovoltaic electricity units may be the answer to poor rural areas in the Third World that cannot afford access to a national elec-

tricity grid.

some time to come they are likely to remain uncompetitive with conventional forms of energy.

Solar power is not likely to have much impact before the turn of the century. Its main contribution in the developed countries will be in world, without a pre-existing energy infrastructure, the possibilities for solar power are enormous. However, some system must be developed that can be produced by these countries themselves rather than exported to them by the more

Gas: Long-Range Transport Costs a Problem

PARIS (IHT)—With world lines, probably in a mixture with reserves not expected to last natural gas. sources located far from the main acy of France's Technigaz and Gazfar into the next century, and U.S.
gas production already on the decline, researchers are trying to those for oil, and they are better develop a new artificial gas that distributed. Some 40 percent of rewould incorporate the whole energy content of coal-synthetic natural

When gas was first used towards the end of the 18th century for street lighting in Europe, it was nothing more than a by-product of the transformation of coal into coke for iron smelting. Since it represented only part of the coal's energy content, its calorific value was low. Only in this century has this "town gas," with its harmful carbon dioxide content, been steadily replaced by natural gas with double the calorific value.

Natural gas is almost as precious as fuel oil. It has almost the same calorific value, it is extremely efficient when used for heating and cooking, it does not contain any carbon dioxide and suffers from none of the pollution problems associated with oil or coal. A source for petrochemicals and fertilizers, it also, when converted into methanol, be used as a transport fuel. With new gasification techniques, it can be manufactured from oil or coal. Pipelines originally used to sup-

ply town gas can be adapted to carnatural or synthetic-natural gas. Eventually, if hydrogen becomes a key energy vector, it may even be transported within these same pipe-

maining resources are reckoned to be associated with oil reserves, with 60 percent anassociated or dry. According to the Workshop on Alternative Energy Strategies, proven gas reserves are only 386 billion barrels compared to 658 billion for oil, but some experts reckon that ultimately recoverable reserves may be as high as the 2,000-billion estimate for oil. With gas consumption currently lower than oil, natural gas may well outlive its hydrocarbon

Key Problem

But the development of natural gas as an alternative fuel to oil has been hampered by one key prob-lem—the cost of transport over long distances. Whereas oil can be shipped from one part of the world to another at little cost, the transport of natural gas can involve very heavy investment.

This is why oil companies often do not bother to develop dry-gas discoveries, why producing coun-tries with little domestic demand for energy are still flaring their associate gas and why electricity-gen-erating plants are so often allowed to burn gas when it could be used much more efficiently in domestic

consumption centers, transport is the key bottleneck to the increased use of gas.

There are three ways in which natural gas can be transported over long distances: It can be carried in its normal gaseous state in pipelines; it can be liquefied to a temperature of minus 160 degrees Celsins so that its volume is reduced 600-fold, and then transported in special tankers to its destination where it is reconverted into natural gas; or it can also be converted into methanol and shipped to its destination in this form.

When the gas is to be transported overland, the pipeline solution is invariably the cheapest in the long

The real difficulties arise when gas has to be transported across the sea. In most cases it will not even be possible to lay a subsea pipeline and the choice must lie between liquefaction or methanol conversion. The first country to face a major

transport problem was Algeria, which opted for the liquefaction route. It is in this field that most of the research has so far been con- tank technique. Two French comcentrated.

In the field of liquefied-naturalgas (LNG) plants themselves, the sidiary of Gazocean-toyed with market has been dominated by two the idea of using a similar method, companies. Air Products of the but ended up developing their indi-United States and Technip of vidual membrane tank techniques: France, while in transport the one using steel with a 36-per-Norway's Moss Rosenberg is mak- cent-nickel content, the other stain-

The original technology used for building LNG plants was the classical cascade process, which has been used in plants in Algeria and Alaska and is to be taken up again in Nigeria. Under this tech three cycles and three different fluids (propane, ethylene and methane) are used to freeze the gas.

Under separate technologies developed by Air Products and Technip, only two cycles are used-the former with propane in the one cycle and a hydrocarbon mixture in the other, while the latter uses a hydrocarbon mixture in both cycles.

In the transport sector, the membrane tank system developed by the French is competing with the selfsupporting tank used by other manufacturers. Under the membrane system, the LNG is carried in the actual hold of the ship, while under the self-supporting system it is carried in a spherical tank low-ered onto the tanker.

The first LNG ships were built nearly 20 years ago by the Conch group using the self-supporting panies, Gaztransport, subsidiary of Gaz de France, and Technipas, subthe idea of using a similar method,

less steel. These tankers make up the bulk of present-day LNG fleets. However, in the last few years Moss Rosenberg has been in the running with its self-supporting tank technique. A similar system, Senner, is being offered by Spain's Crinavis shipyard. The advantage of the self-supporting tank technique is that the spheres can be manufactured separately, although the French claim that membrane

Disadvantages

There are three major disadvantages in liquefying gas. The cost of the installations and transport facilities are enormous: 10 to 15 percent of the gas is lost in the actual liquefaction process; and there is a danger of explosion occurring at the plant or on the tanker. It is largely due to this safety factor that thought has been given to the conversion of gas into methanol, for methanol can be transported in normal ships at virtually the same

However, the methanol idea has never really been developed, One idea currently under consid-

eration is to build a collector pipeline that would pick up gas from a number of smaller fields in the North Sea. Another, more farfetched idea would involve liquefying the gas on the spot using a floating plant.

のでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mm

The Hydrogen

For reasons of environment, and is the storage of hydrogen in the .o save energy, all sorts of new reearch efforts on power have been started. Mercedes-Benz is working on aspects of this large R & D field.

At the present state of technology hydrogen looks like being one of the future forms of power. Hydrogen is present in practically inexhaustive quantities in water, given the primary energy such as coal. required to extract it. Distribution of hydrogen in its pure form or as a mixture (town gas) offers no special technical problems. A hydrogen technology necessary to cover the present hydrocarbon energy requirement would however require considerable extension to the existing gas works and gas distribution or their reconstruction.

Hydrogen technology is especially favourable since like oil technology it can be used across the board as energy supply for domestic needs, industry and vehicles. It would seem perfectly feasible to have a combination of gas (hydrogen)/electricity for domestic and industrial purposes and, say, hydrogen/methanol for transport. For several years now Mercedes-Benz has been experimenting with hydrogen driven vehicles in practical conditions.

The normal combustion engines of today can be converted from petrol to hydrogen with some technical alterations. The key problem

vehicle and Mercedes-Benz has already shown that some new ideas can be put into practice in running vehicles. The key word is: the chemical combination of hydrogen in the form of metal hydrides. This development is being encouraged by the Federal Ministry for Researchund Technology.

Hydride propulsion (hydride container - hydrogen engine) involves the following: the heat released during combustion (in exhaust gas or cooling water) has to be applied to the hydride to release the hydrogen which serves as fuel. On the other hand heat is generated when hydrogen combines with the metal (hydride formation, fuelling process) which corresponds to the motor combustion head previously stored in the metal.

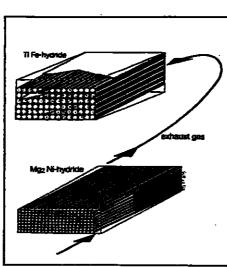
By means of appropriate combination of storage of various hydrides (working at various temperatures and pressures) the whole hydrogen

- rank can serve the following purposes: Fuel containers for a cruising range of about 200 km (already feasible) to say 400 km, in future with a 200 kg tank weight
- and a motor of 44 kW (60 h.p.). Air-conditioning and hence refrigeration inside the vehicle without surplus weight or any further use of fuel (use of warm air to free hydrogen from



hydride with simultaneous air-

- cooling to -10°C). Heating the vehicles is based on the principle that where there are hydrides at different pressures and latent heat levels, equalisation of pressure results in the release of latent heat.
- Heat storage and retrieval in the



fuelling process through the use of a combination of various hydrides. This permits a practical heat-free propulsion of the vehicle which is particularly important in underground transport such as mines.

The hydride propulsion concept as developed by Mercedes-Benz enables one to store heat generated by engines and to choose time and place of retrieval (at fuelling) so that this fuel can be utilised.

This means that energy can be retrieved and used again e.g. in thermal power stations or zonal heating systems. The amount of energy retrievable is about 30-50% of the lower heat value of the fuel tank content. The prime energy use in the combination vehicle/district heating can therefore be raised from less than 20% (medium efficiency of engine) to over 50%.

The first world prototype of a hydride combination storage with all the functions mentioned above was

built at the end of 1976 and is under- use of primary energy through: going practical tests (Fig. 1).

As the above considerations also apply to stationary storage, hydrides provide efficient-heat (use of surplus heat) in the domestic energy supply and free air-conditioning (use of warm air to free hydrogen from metal hydride). Given gas supply in a town (gas with hydrogen content) and the ability of hydride to absorb hydrogen out of these mixtures, there is the possibility of fuelling vehicles at the domestic gas tap. This means a steady switch from oil to hydrogen technology which allows the use not only of a pure hydrogen propulsion but also of a mixture of hydrogen and petrol (Fig. 2).

As in future the best possible use of the still available reserves of energy will be still more important

than today, optimum use must be made of the supply of energy itself, and not only in respect of vehicles and households. The initial results

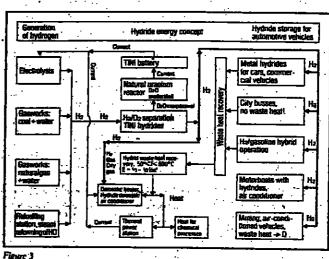
of Mercedes-Benz experiments show already that with the help of hydrides, electrochemical accumulators can be made especially suitable for electrical peak load storage. Furthermore, with the help of

hydrides, heavy water for natural uranium reactors can be made on favourable terms, energy and price wise.

Apart from the good environmental aspects and its independence of oil, hydrogen from metal hydrides makes possible (see Fig. 3) an optimal • retrieval of waste heat from

- all combustion processes
- use of waste heat for heating and cooling
- reduction in use of energy in the production of reactor fuels (natural uranium instead of processed uranium through the use. of cheap heavy water). This would mean that one could become to a large degree independent of the supply of enriched uranium and therefore of the nuclear super powers.

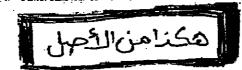
The production of hydrogen on a large scale would first be made through coal, possibly also gas; in the distant future these processes could be replaced by nuclear stations and possibly by thermochemical decomposition of water. As hydrogen technology has now got going as



the result of past successes, it is likely to offer many interesting possibilities and not only for vehicle propulsion.

Mercedes-Benz Engineered like no other car





Electricity: Seeking Methods to Reduce Inefficiency, Loss ...

burning fuels that could be directly put to use...

ONDON (IHT)—Oil producers are often criticized for flaring associate gas on their oil fields. But what is often forgotten is that con-Sumer countries also waste valuable energy in generating their electrici-

About 65 percent of the energy originally put into a power station is lost in the form of waste hear and 10 percent through transmission losses. It is only when the current is produced by a hydroelectric system that the overall losses can be kept to little more than 20 percent.

There is very little to be done about this. Under Carnot's law it is impossible to generate more than a certain amount of electricity at a specific temperature. The efficiency of an average power station is be-tween 30 and 40 percent, of a gas turbine or diesel engine 20 to 25 percent, of soft energies such as the sun, wind and waves 15 percent or

The answer might be to avoid using electricity where a primary fuel would do a better job. It may be perfectly justifiable to consume four times as much energy for a service which cannot be met by a pri-mary fuel. There is nothing comparable to electricity when it comes to lighting, high-temperature industri-al applications, and domestic appliances. But there is no point in using electric heat in a room when primary fuels such as oil, gas and coal can do the job so much more effi-ciently. Despite the fact that domestic electric fires may be more than those using oil, gas or coal.

Upset

Although most people now agree that it is better to use gas or even oil, rather than electricity, for heating, the electricity company offi-cials are understandably upset at energy market. They have been trying to find ways to raise the effi-ciency of electricity generation and reduce transmission losses.

Thanks to improved turbines, it is now possible to obtain as much as 40-percent efficiency out of a power station. By recycling waste heat through a second turbine and developing higher combustion heats with high-temperature gas turbines or gas-cooled reactors, efficiencies of 50 percent can be achieved. Transmission losses can and transmission and if heat pumps be reduced by increasing the voltage of transmission lines or by adopting direct current instead of alternate current. Research is being done on the possibility of making underground cables super-conduc-tive by reducing them to sub-freezing temperatures. But that still leaves electricity a long way behind

natural gas, which reaches the customer at over 90 percent efficiency. Electricity company officials argue that houses will need electricity anyway and that electric appliances

efficient than their primary fuel rivals, the current feeding them is a second-generation energy.

They point to the progress being made with electric heat pumps that extract outdoor heat, even in cool air, and pump it inside. Although these pumps are better for air conditioning than heating, they are ex-pected to double the efficiency of electric heating. Finally, they argue that once current power stations are replaced by fast-breeders, the waste will not matter. By that time losing so much of their potential it might be better to consume uranium 238 than what is left of oil, gas and coal.

'Domestic User'

"Every domestic user wants to use gas for his heating nowadays, but in 10 to 20 years there may not be any gas left," according to Dr. Walter Marshall, deputy chairman of the United Kingdom Atomic

were installed in homes, consumers would receive almost as much energy as was injected into the power stations in the first place. However, some of it would have come from the air outside. The only real competition that electricity would then face would be the gas-fueled heat pump, when it becomes commer-

There is one obvious way of getting more out of electricity generation, but unfortunately it arouses little interest from utility-company directors. This would be to use the waste heat from the power stations

Environmentalists will often argue that more electricity is now being generated than is really necessary. They are appalled at the waste in

dumped into rivers or the sea, could be put to a useful purpose.

in tanks, uranium and plutonium

kept safe in special deposits, coal piled up on waste ground, water stored in a dam, but what can one

do with electricity? Not only does

this pose a problem for the utilities,

but it represents a major obstacle in the development of alternative en-

ergy sources such as solar, wind

and wave power. Storage is vital

when production or demand may

At the moment electricity storage

to provide hot water and heating for homes in the area. Potentially in Czechoslovakia waste heat from in Czechoslovakia waste heat from the Skoda factories is used to heat the local town. District heating sys-tems can be found in Warsaw, Malmoe, Odense and in the Ruhr. The West Germans are considering a national hot-water pipeline net-

Many people find the idea appealing. Not only could such a network take advantage of the enormous heat losses from power stations, but it could also use waste heat from factories, boilers and in-cineration plants. It could even carry geothermal heat or water heated

tice today involves using spare elec-

tricity to pump water into a high reservoir for use at a later date as

hydroelectric power. The loss on

such storage may however exceed 30 percent and suitable reservoirs

are not always available. Research

is now being carried out on storing

electricity in the form of com-pressed air, compressed hot water or in giant spinning flywheels. At the household level, heat can be

stored in insulated water tanks, in

the ground, in rocks or in certain

chemical substances such as

A technique of interest to utili-

ties and end-users is electricity stor-

age through batteries. Cells have been developed based on nickel-

iron, nickel-cadmium, silver-zinc,

sodium-sulfur, lithium-sulfur and

lithium-chlorine, but no system has

Another possibility would be to store electricity with the help of large direct current superconduct-ing magnets. Despite the refrigera-tion needed to maintain the super-

conducting state and the losses en-

countered in converting the current

to and from alternate current, the

efficiency of such storage looks like

Using Hydrogen

But what is arousing consider-

able interest among researchers is

the idea of turning spare electricity into hydrogen. For hydrogen is a clean fuel, which can be reinjected

being very high.

yet been developed which can be said to have a decisive lead over the traditional lead-acid battery used in automobiles.

does come up with the purity required if hydrogen is to be used as fuel, uses up an enormous amount of electricity. Researchers

But many utility-company offi-cials consider that their role is to provide electricity, not hot water. They fear that the efficiency of their power plants may have to be reduced to keep the waste heat at the 90-degree minimum required for district heating. They point out the huge cost of building hot-water pipelines, the heat losses incurred during transport and the duplication of existing systems.

Huge Cost

British district-heating consult-ant Ernest Haseler rejects these criticisms. "Provided there is ap-

planes. It can also be applied to

power fuel cells or produce chemi-

cals. On an industrial scale, it can

be stored as a gas, a liquid or with metals in a hydride compound, while at the household level metal-

air batteries or titanium-hydride

storage tanks can be used. And all

Cost

The only trouble with hydrogen

is its production cost, its low calo-

rific value and its explosive quali-ties. Under current technologies hy-

drogen can be manufactured by the

catalytic cracking of natural gas or

through the electrolysis of water.

But whereas the first method con-

sumes valuable natural gas and

turns out an impure hydrogen

which is only suitable for industrial

applications, the second, which

are therefore examining ways in

which reasonably pure hydrogen could be produced at a lower cost

What appears to be the most

promising technique is a thermo-

chemical process. Various thermo-

chemical routes are currently being

examined at Ispra in northern Italy as part of a research project spon-sored by the International Energy

Agency with EEC participation. At

a later stage in the project the parti-cipants will examine the feasibility

of using high temperature nuclear

heat to produce hydrogen on the basis of a sulfuric acid cycle. An-

other idea that has also been con-

sidered is the use of the photosyn-

thetic apparatus of green plants or

than by electrolysis.

this from a by-product of water.

better suited to countries which are building new towns or are accustomed to living in high-rise apartments. "The introduction of combined heat and power in 10 to 20 towns could save Britain some 20 million tons of coal a year," he Some researchers are also look.

propriate hot water storage, utilities should be able to maintain the right water heat without lowering

their electricity output," he says.
"With modern insulating materials.

heat loss up to 40 miles is less than with electricity cables. With four

houses to the acre the cost of in-

stalling pipes would only be £290 a house; with 40 to an acre only £176

A Celi

UKAEA's Dr. Marshall recognizes that combined heat and pos-

er could make a contribution to

Britain, but feels that it would be

a house," he adds.

ing for an electricity-generating technique which would avoid the Carnot cycle altogether. At the moment two different methods are being examined that promise efficiencies of 50 to 60 percent. In the first, cells are used to produce electricity; in the second, electricity is produced by the power of a magnetic field.

Under the first system, a cell with two platinum electrodes is immersed in a solution of sulfuric acid. Oxygen is then fed into one electrode, and hydrogen, propine hydrozine, ammonia, methane or some other gas into the other. The result is electricity. Despite the cell's early promise, nothing has been developed that would be suit able for electricity generation on an industrial scale.

Progress in the second method magnetohydrodynamic generation (MHD), is even less advanced lonized high-temperature gas is passed through a strong magnetic field a high speed, creating electricity. By placing electrodes in the gas, the electricity can be extracted.

Environmentalists will often at gue that more electricity is now being generated than is really: essary. They are appalled at waste in burning fuels that couk directly put to use, and they ret increased electricity consum as the justification for nuclear p

Still, the only way in which a soft energies can be harnesse through electricity generate Many experts believe that the n important area for research is obtaining greater efficiency electricity generation, transmis

dangerous waste water, normally

District heating is not a new idea: Houses in Paris are heated through waste incineration; in Lon-don, Whitehall is kept warm by wa-

... But Storage Still Its Main Weakness One of the main weaknesses of electricity is that it is difficult to store. Oil and gas can be stocked store. Oil and gas can be stocked their generating capacity to keep it their generating capacity to keep it in line with demand variations.

This involves using small, but cost-

ly generating units which can be

brought into action at a moment's

notice. The main policy has been to

even out demand variations as

much as possible by encouraging the use of accumulator heating and offering cheaper tariffs when de-

Storage Systems The only storage system in prac-

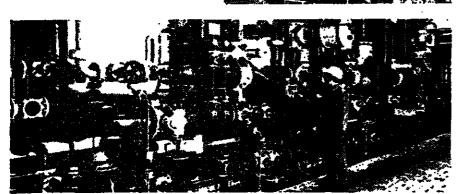
Our Strengtha broad Base



Trading and Transportation.

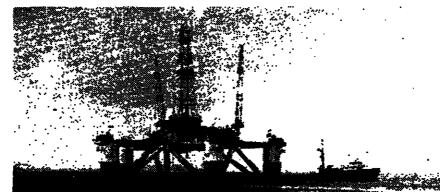
STINNES and RAABKARCHER are the Group companies that specialize in worldwide trading and transportation. Their activities include freight forwarding and handling, ocean and inland shipping as well as pioneering new markets.





The VEBA Group, one of Germany's major energy producers, is at the same time a broadly based industrial and service organization with a total annual turnover of more than DM 27 billion, about 67,000 employees and close on 1 million shareholders. This vast base represents the Group's basic strength.

Electricity. VEBA's corporate backbone is electricity generating and supply providing millions of households and numerous industrial users with power generated from various fuels such as coal, oil, natural gas and nuclear energy. This operating sector absorbs more than 70% of total group investments which are close to DM 2 billion



Exploration. VEBA's worldwide oil exploration is undertaken by its subsidiary DEMINEX which has started to benefit extensively from its successful finds in the Thistle Field in the British sector of the North Sea of which it controls about 40%. DEMINEX will provide the VEBA Group with crude oil on an increasing basis.

Petroleum & Chemicals. The Group's petroleum and chemical activities ranging from jet fuels to petrochemicals, from plastics to fertilizers are concentrated with VEBA-Chemie, a multiproduct oil and chemical concern, encompassing several specialized com-



For further information and your copy of the Annual Report please get in touch with VEBA AG, P.O. Box 300306, D-4000 Düsseldorf 30

into power stations, piped to cus-tomers like gas for heating or used as a fuel in motorcars and airthetic apparatus or grown pulled algae for hydrogen manufacture. —M.F. Oil: Its Days Numbered

With limited cash

(Continued from Page 1) hored to the sea bed. Then came the drilling vessel, which was held in place by dynamic positioning. The latest development is a semisubmersible platform with dynamic

In the production field, compa-nies were forced to build steadily larger platforms as water depth d. Some were made of steel, others of concrete. Large barges were developed which could lay pipelines on the seabed at greater speed and under tougher weather conditions. A whole new industry nerged combining the skills of the shipbuilder and the engineer.

Deeper

However, the companies have ound that as they have made disoveries in deeper waters, traditional production methods have be-come increasingly cumbersome and costly. A platform now being built by Shell in the Gulf of Mexico is urger than the Empire State Build-

With limited cash at their disposal the companies are looking increasingly to cheaper systems that would allow production to be car-ried out on the seabed instead of rom the sea surface. In this way here would be no need for a costly fixed platform, only for a floating

There are basically two concepts of a subsea system—the dry and the wet. Under the former, an atmospheric chamber is clamped onto the wellhead permitting routine intervention by maintenance engineers lowered in transfer bells. Under the latter, operations are remote-controlled with a backup system permitting human intervention in an emergency.

U.S. companies such as ockheed and Cameron Iron Works have been developing dry systems. A Lockheed version is just about to come onstream at Garoupa in Brazil. The French and Exxon prefer the

more complicated wet systems. France's Comex Seal installed a wet system in the North Sea, Elf/Aquitaine recently tested its own version off Gabon and Exxon while the supporters of the dry system feel it is simpler to reproduce onshore working conditions on the seabed, those backing the

wet method argue that it is safer fo. both the companies and the man-tenance staff not to rely on routine uman intervention in such depths. However, production technology is not keeping up with the advances in exploration techniques. While

production has reached only 1,000

at their disposal the companies are lookincreasingly cheaper systems that would allow production to be carried out on the seabed instead

feet, exploration is now moving into the 3,000-foot region. But with new floating platforms attached by wires to the seabed and the subsea stems described above, the gap is

of from the sea sur-

likely to close. if the difficulties of getting onshore permits and the desire for diversification of supplies have driven the companies into the offshore, the sharp increase in oil prices has made the companies more conscious of the need to improve their oil-recovery methods. Unless special methods are used, as little as 25 percent of the oil reserves may be recovered.

Under secondary-recovery methods that are already widely practiced, another five-to-10 percent of the oil can be recuperated. The most common methods used are the injection of water, compressed air or gas. Water is the cheapest of the three systems, but the use of associated gas may be attractive to producers in the Middle East or the North Sea as they can gain the additional benefit of reducing flaring.

Enhanced recovery techniques which are now being developed within the industry should bring recovery rates to as much as 40 percent. Under one technique chemical fluids are injected into the well, altering the oil's viscosity. Under another, the same effect is achieved by raising the temperature of the oil through burning part of it or by injecting steam once the oil has been thinned making it more diffi-cult for the oil to cling to the rock pores. However, with today's oil prices these techniques remain

economical. Although it may be that current estimates of the world's recoverable sort of energy contribution oil reserves are too pessimistic, it is now certain that the first expecta-

tions of oil that would be availa from shale and tar sands were reverse. According to answers gi by energy experts to a poli taken the Institut Français du Petrole, reserves from shale total 2,800 lion barrels, while those from sands and heavy oils total 2,100 lion. But very little is exploits under current technology and p

Huge deposits of shale exist the United States, Brazil, Cana Burma, the Soviet Union and C na. But if kerogen in the rock be easily converted to oil by he ing crushed shale in a retort at 4 Celsius, even the best deposits of yield 30 gallons of oil for every! of rock. Those 30 gallons also quire 90 gallons of water. With t system, oil production from sh causes much the same environm tal problems as strip-mining coal-without the same return.

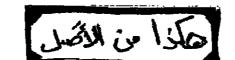
In Situ

More promising, at least for lo er-quality shale, is the idea of he the shale in situ and pumpit out the oil produced. But so far a industrial mining operation h gotten off the ground.

Progress on the exploitation (more encouraging. In Canadi where the world's largest tar-san reserves can be found, 50,000 bit rels per day are already being pri duced by Great Canadian Sands, and another 125,000 bpd & due to be extracted soon by Sy

In Venezuela, where he reserves of heavy oil have be found in the Orinoco Basin, government is considering last scale exploitation. Although A duction costs are near coro world prices, problems similar.4 those with shale have arisen. More of the oil lies too deep for suffer. mining and must be recovered b in situ methods. Water flooding thermal means and diluents being investigated as methods for separating oil from undergroun

Most experts find it somew absurd that enormous sums should be invested in the offshore, in the Arctic regions and in the field of tar sands and shale when Middle East oil can still be produced at under a dollar a barrel. Even toda when oil prices have reached 511 ur more, most of these resources it main uneconomic. Only if oil prices rise substantially, they feel, will shale oil and tar sands make the





A Future for Coal, the Cinderella of the Hydrocarbon Family

ONDON—Industrial society sources are reckoned to be almost only really began in the 18th 50,000 billion barrels of oil equivacentury when coal replaced wood in the smelting of pig iron. Since then it has been used to power railways and ships, to supply heat for industry and homes, to manufac-"fure chemicals, town gas and elec-tricity. Although little by little, coal has had to give way to oil and gas, it was only in the late 1960s that it lost pride of place as the world's

main energy source. When future generations look back at the oil/gas era, it may appear as nothing but a brief aberration in the long reign of coal. Ac-cording to forecasts made by the 1974 World Energy Conference. economically recoverable resources are six times those of oil at 3,000 billion barrels of oil equivalent, ultimately recoverable resources 12,000 billion compared to only

But unfortunately coal suffers from many disadvantages: It is difficult to extract, especially when it lies underground; mining can dis-figure the landscape and use up valuable water supplies; transport and handling are awkward; combustion releases dangerous sulfur dioxide, ash and particles. Only if these handicaps can be overcome, can coal resume its traditional role.

When it comes to production, the main difficulties arise underground. While high output can be achieved on the surface thanks to huge excavating machines, in the pits miners have to work in difficult conditions to extract much smaller volumes of coal. As the better seams are exploited, underground extraction could become even more

But even in underground mining, Europeans have much to learn from the United States, where productivity per man is three times as high. If coal is to have a future, production techniques must be-come as advanced as in the oil industry. This means greater mechanization, more efficient cut-ting methods, better underground transport facilities, safer working conditions and fewer miners under-

ground.

Transport is as much a question of organization as of technology. In Britain and the United States special train delivery systems have been organized between pit and power station. U.S. coal companies have developed slurry pipelines, which carry a mixture of coal and water over long distances. The French are developing a special port at Le Havre which can receive national Energy Agency is pushing the development of an internation-

al coal trade.
The greatest obstacle to the development of coal is, however, the environmental problems it raises—from the damage done by strip mining to the sulfur-dioxide fumes emitted by power stations and boilers. Land reclamation is essentially a question of the amount of money a society is prepared to spend to maintain a certain quality environment, but technology may well be able to solve coal's pol-

lution problem.
Pollutants can be recovered from coal at three different stages—be-fore combustion, during combus-tion or after combustion. Until now research has tended to concentrate on the last phase when the fumes are just about to enter the atmosphere. At first utilities only had to build their chimney stacks high enough so that the pollution was

dispersed, but now they are being forced increasingly to install so-called scrubbers that can remove over 50 percent of the pollutants. This cuts the efficiency of a power

station by more than 20 percent.

More promising is a process under which the pollutants are removed during combustion. This is the fluidized bed combustion system currently being developed by a consortium made up of Britain's National Coal Board, British Petrolemm and the National Research Development Corp. in a project sponsored by the IEA.

Under this system coal is burned in a bed of mineral particles, which are kept in a fluidized state through the injection of a high-velocity flow of gas. The advantages of this form of combustion are that almost all the coal is burned (including the pollutants), that lower tempera-tures are required and the boiler

mentalists. Developing countries have enormous possibilities, but they can rarely afford the huge in-

electric projects and may also be re-

luctant to interfere with existing

navigation or fishing activities. With only limited local electricity

demand and with the difficulties of

transmitting electricity over long

distances, hydropower is not eco-

nomically viable in many of these

The exploitation of water power

through hydroelectric schemes is

imited essentially by cost. Long-

distance transmission of electricity

remains a subject for research, but

it is difficult to see how the efficien-

cy of the turbine generators could

be raised much above the 90 per-cent levels already attainable. Re-

search work has therefore shifted to

other less conventional sources of

One idea is the use of tides. If the

old water mills were to give way to

hydroelectric schemes, why should not the old tidal mills be replaced

by large tidal power stations. For more than 10 years the French have

operated a 240-megawatt plant of

this kind at La Rance, near St.

remote areas.

water power.

stments needed for major hydro-

ventional one.

Another approach would be to remove the pollutants through pro-cessing the coal before combustion. This can be achieved through reducing the coal into solvent refined coal (SRC) or through transforming it into low-quality gas. Gas conversion could be carried out through a conventional town-gas

process or directly in situ. But if utilities are going to convert coal into oil or gas as a means of reducing pollution, they might as well use these fuels directly rather than burn them in power stations. It is extravagant to use up 35 percent of the coal's energy in gasification or liquefaction only to waste 75 percent of what is left in electricgeneration and transmission.

Manufacturing SNG

Of course, if coal is to be used as a direct fuel to replace natural gas rather than as a low quality coal gas for power stations, it will have to be upgraded. Until now synthet-ic natural gas (SNG) has been manufactured from naphtha, but with increased cost of oil, research is now being concentrated on possible coal conversions.

The first research on manufacturing SNG from coal was based on existing town-gas technologies. Of the three main techniques—Lurgi, Koppers-Totzek and Winkleronly the Lurgi process operated at the high pressure required for the upgrading process. It was therefore adopted by the National Coal Board in successful trials carried out at Westfield, Scotland, in 1974. A more efficient version with a socalled slagging gasifier is currently being tested at the same center. The main aim of these experiments has been to widen the range of coals that can be converted in the Lurgi gasifier. Meanwhile Koppers-Totzek and Winkler are reportedly trying to develop high pressure versions of their systems.

But a whole new generation of gasification systems is now being developed in the United States that promises to be much more efficient. Whereas the Lurgi process uses fixed bed combustion and upgrading is carried out by methane synthesis, the new systems involve fluidized bed combustion and upgrading by hydrogenation. Among

Hygas, Coga, the C02 Acceptor, Synthane and Bi-Gas. Coal Liquefaction

Less advanced are the coal liquefaction techniques. The conversion of coal to a liquid involves either the addition of hydrogen or the removal of carbon. Processes involving the former include direct hydrogenation, solvent-extraction hydrogenation, and the indirect use of hydrogen in the gasification synthesis. Pyrolysis processes are an example of the latter route.

While large-scale liquefaction plants have been built using the above processes, only one plant, that of Sasol, is currently in operation. This plant uses the gasifica-tion-synthesis route involving gasification through the Lurgi process followed by the Fischer-Tropsch synthesis. But now that oil prices have risen, interest has been re-vived in all these technologies.

Sasol is now building a second plant. A 545 ton-per-day demonstration unit is being built by hydrocarbon research using the H-Coal direct-hydrogenation process, and detailed designs are proceeding for similar large demonstration units for the Exxon Donor Solvent (solvent extraction-hydrogenation) and Cogas (pyrolysis) processea. (Britain's National Coal Board is also working on a solvent extraction process requiring less hydro-gen. The process is called Supercritical Gas Extraction.) The major technical problem with all routes apart from gasification synthesis is the separation of undissolved coal and residual matter from coal liquids and solvent.

Although the NCB has developed a process for producing as much as 50 gallons of oil per ton of coal, it remains uneconomical. "There is little scope for cutting li-quefaction costs," says David Dainton, director of NCB's coal research center at Cheltenham. "It will only become economic when oil prices rise."

One of the main problems in manufacturing synthetic fuels is the energy consumed in the process. As much as a third of the coal is burned in gasification, a similar amount in supplying the hydrogen for liquefaction. One answer could be to use the heat from high temperature nuclear reactors for the conversion process. Under an ex-

considered in West Germany. a 750-megawatt pilot high-tempera-ture reactor will be used to produce both coal gas and synthetic oil

Coke, Electricity

Coal today is used essentially for making coke and electricity. Until now it has been generally assumed that increased coal use would be limited to these two sectors. But a growing number of experts argue that when it comes to space heating it would be cheaper to convert coal into SNG rather than generate electricity with it. They also claim that SNG is cheaper than imported LNG if taxes paid to the government are excluded. But it is onite possible that coal may even have a future as a direct fuel for heating, atileast for factories.

Coal has been steadily abandoned as a heating source because it is impractical, inefficient, dirty and polluting. Recent research suggests that this need not necessarily be so, however. Already finely granulated coal can be numbed into a customer's fuel tank from special trucks in much the same way as oil can. With fluidized hed combustion, factory boilers can be smaller. more efficient and less polluting. Even in the home more efficient heating appliances and smokeless fuels are making coal a more attrac-

tive proposition. But five years after the oil crisis the future of coal still remains very uncertain. It is difficult to persuade utilities to go back to coal when oil is so much more convenient and nuclear power within their reach. After abandoning coal for oil, in-dustry is not going to change back overnight and households are now committed to the oil, gas or electricity systems they have installed. With the constant threat of strikes by miners, the environmental damage done by mining and pollution and the effect on the atmosphere of growing carbon dioxide as a result of coal combustion, this is hardly the ideal fuel.

But amid all the pronouncements of doomsday men, it is useful to re-member that if we are prepared to pay the price, coal can provide all the services now offered by oil and gas for centuries to come. Coal may be a Cinderella in the hydrocarbon family, but its time will surely

Wind, Water, Wood: Searching for a Better Harness

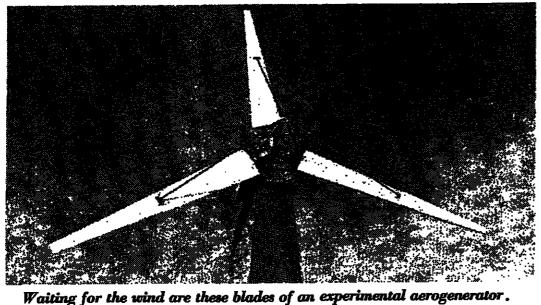
BRUSSELS—Until the discovery of the steam engine in the 18th century, man relied essentially on wind, water and wood for energy-wind to propel ships, water and wind to power corn mills and water pumps, wood for iron smelt-ing, cooking and heating. The ener-gy created was small, but it was suf-ficient to meet the modest needs of

non-industrial society.

Now that the fossil fuels that have played such an important role in industrial society are in danger of running out, the question is being asked: Should we not return to these three by-products of solar energy?

Some environmentalists advocate the trimming of energy needs to what they were before the intro-duction of fossil fuels, but most advocates of these soft energies are looking for some way of reverting to them without lowering living standards.

Of the three energy sources, only water plays an important role in developed countries today. Whereas our ancestors could extract very little energy from their water and tidal mills, the development of turbines has opened up the potential of hydroelectric power. To this day no cheaper source of electricity has



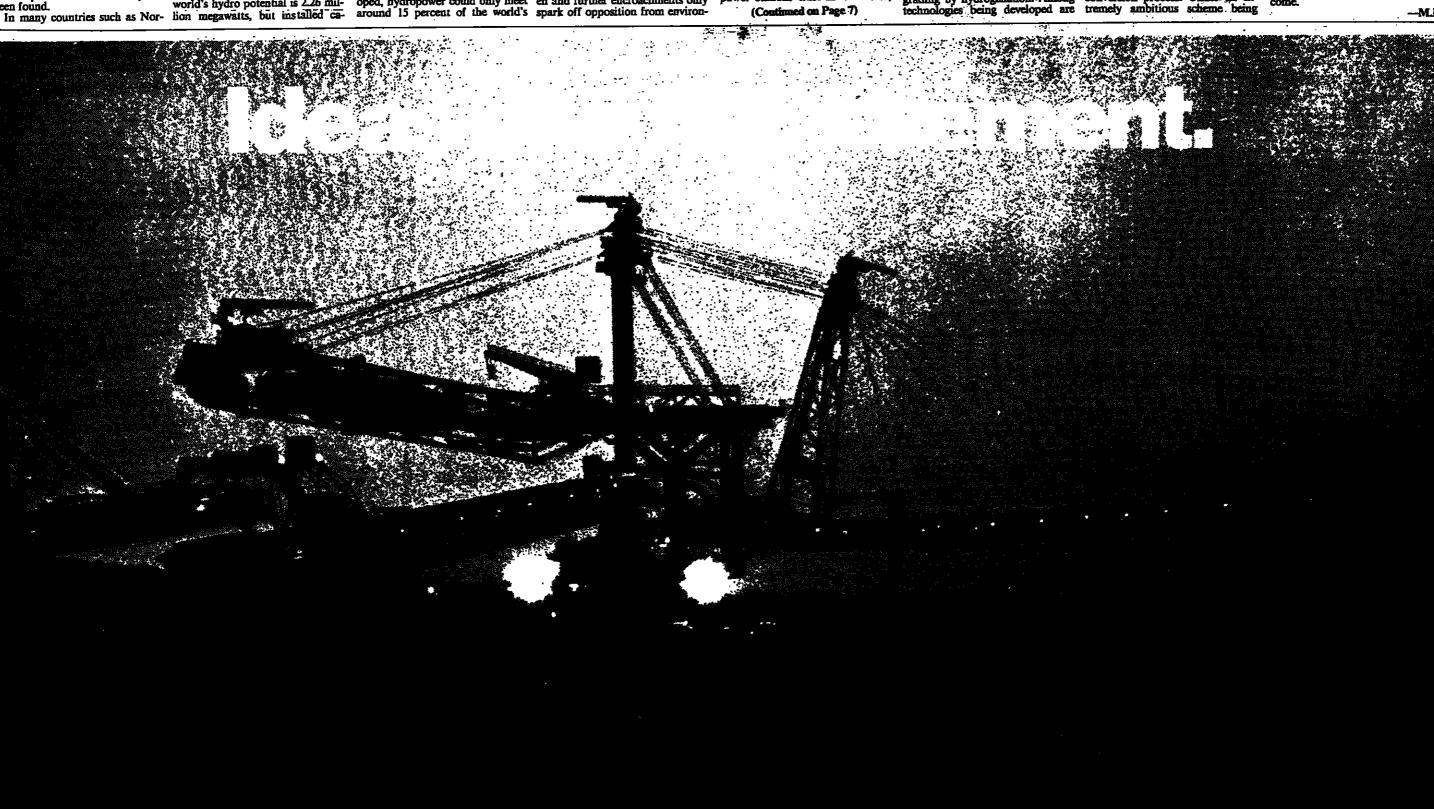
way, Sweden, Canada and Brazil, hydropower remains the main source of electricity generation. In the Third World the potential for hydropower remains largely unex-ploited. According to the 1974 World Energy Conference, the world's hydro potential is 2.26 mil-

na is thought to have a hydro po-tential of 330,000 mw, the Soviet Union 269,000, the United States

pacity totals only 307,000 mw. Chi- total energy needs compared to barely 2 percent today.

186,000, Zaire 132,000, Canada full potential is unlikely to be 94,000 and Brazil 90,000. Yet even exploited. In developed countries if all these resources were devel- the best sites have already been takoped, hydropower could only meet en and further encroachments only

Malo in the northwest of France. About 30 sites suitable for tidalpower stations exist in the world,



Progress begins with ideas. Where ideas keep moving ahead they change the face of the earth.

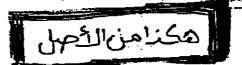
Today's ideas are tomorrow's technology, as with industrial installations, where ideas grow into systems, and where total plant performance depends on the efficiency and reliability of each component.

AEG-TELEFUNKEN designs and supplies electrical

equipment for every application, including the world's biggest coal stacker operating in an open-cast lignite mine. Electrical plant systems and industrial electronics from AEG-TÉLEFUNKEN.

AEG-TELEFUNKEN

Designing for today, planning for tomorrow—setting the trends





Interview: 'We Need Growth . . . and Energy Creates Growth'

MANNHEIM, West Germany er output while decreasing the (IHT)—When the Hannover harmful effects on the environfair, one of the most important industrial trade fairs in the world, is held this month, it will inaugurate a program on energy systems with more than 300 lectures by special-

The initiator and chairman of this program is Hans Freilaender, deputy member of the board of directors at the German subsidiary of Brown, Boveri & Cie., whose prodncts extend from power plant equipment and household appliances to solar-heated homes.

As a representative of the energy industry, Mr. Freilaender was in-terviewed by Thomas C. Lucey of The International Herald Tribune.

Mr. Lucey-You recently quoted the 1975 figure for total energy investment in West Germany, some 15 billion marks (now worth \$7.5 billion), and pointed out that it was almost half the total figure for all investments by industry in this country. Does this ratio still hold

Mr. Freilaender—The 1976 figures are not yet available from the Federal Statistical Office in Wiesbaden, but according to the IFO economic institute, industrial associations and other sources, it is still about 50 percent of all investment

or maybe slightly less. Q—What do you expect for investment in 1977 and 1978?

A--The problem is that we have building of all power plants in

For example, BBC was working on a filter for a coal plant in Westphalia that would increase the pow-

ment. However, an engineer brought a legal complaint against the project and it was upheld by a court in Muenster that stopped all work at the site.

Q-What do you mean by an unofficial construction stop?

A—The specifications for building power plants are contained in

an administrative rule giving technical specifications on air pollu-tion. It is binding on the builders. But the administrative rules do not bind courts, who can make their decisions by other standards. So if someone protests about the building of a power plant and takes the matter to court, the decision need not be based on the standards that the builders were required to

So power plants are not being built in West Germany. Work on the sites has stopped.

These contracts are very longranged. There is a large capital investment in machines and highly, very highly, qualified workers.
When there is a construction stop, the capacity of the factories stops and the capacity of the workers stops. Things are running idle. Now we are in a situation where we must consider if we can keep this many qualified workers.

Q-How many people are affect-

A—in total, someone has worked had a construction stoppage, not an out these figures: power plant official one but a practical one, for workers alone, 40,000; primary three years. This has stopped the suppliers, another 40,000; with all others, a total of 200,000. If no more power plants are built in the Federal Republic (of Germany), the effects would be more cata-have, but how much of it is eco-

One of the problems is that nuclear plants have been compared with gy creates growth. Those who oppose building new power plants accept that growth is not needed, with all that implies. The results would be overwhelming.

So, instead of baving the needed and the problems.

public is now a country with the ful coal supply is essentially smaller highest labor costs—second only to than the actual coal supply. Sweden and practically no raw materials. We can keep our indus-tries only through high-quality and reasonably priced energy. If there is only expensive energy, it would considerably damage this country.

In the future, we will still need electricity, whether we are using wind or whatever to make it with. So we will need electrical power plants. The question remains, from what source.

Electricity is easy to use. It is easy to transport, available where it is needed without storing it and additional facilities are not needed. You don't have to burn anything. It's available by pressing a switch.
It's clean and doesn't create dirt.

Q-Now Germany depends mostly on coal to make electricity, doesn't it?

A-Yes, almost 60 percent comes form coal and a little more than 7 percent from nuclear energy. O-How much longer can you rely on coal for electricity?

A-It is not how much coal we strophic than this. The Federal Re- nomically feasible to use. The use-

-You noted recently that the need for primary energy in West Germany from 1980 to 1985 is expected to increase by .7 percent for each percentage point in general economic growth. At the same time, the use of electricity is increasing about two points higher than the real increase in the GNP and only in the most favorable carcumstances can it slowly be reduced to the same growth rate. How do you explain this difference in growth rates between primary and secondary energy?

A-We are making more secondary energy with less primary energy. At the same time, the need for electricity is increasing through the trend to rationalization, which is replacing work by hands with work

Q-You have said that the power growth rate until 1985. plant capacity in this country must be increased by about 30,000 megawatts by 1985. Is this figure still up to date?

probably not be reached in the

Q-Has the race already been

Coal plants have comparatively shorter building time, so they may be able to fill the energy difficiencies in the 1980s. Nuclear plants require much longer, eight to the control of the energy needs of the 1980s be filled without nuclear power plants?

A—That is hard to say.

Q—Do you feel you have the quire much longer, eight to ten years from the time of getting the first building permit till the elec-tricity is in the grid. For a coal plant, that would take five to eight

There are now plans in Bonn and at the state level to build new coal ready been given and we figure that there will be some others. I don't know what percentage of the lack of energy they will be able to fill.

There will be some others are the conclusions about nuclear power plants than the people in the field. plants. Permission for one has al-That depends on the GNP growth rate in the 1980s and whether there will be a lack of energy before 1980 or not, which in turn will effect the

We need growth for industry, for our obligations to the workers, to the old. We need growth for our international role and for our domestic obligations. Without growth, the A-It is still current, but it will financial performance by the Fed-

Growth creates energy and ener-

30,000 megawatts by 1985, we will have maybe 20,000 to 25,000 because of the construction stoppage. If permits were given for new nuclear plants this year, the plants would not be in use by 1985, and it was just reported that the permission for the reactor at Neupotz can no longer be expected for this year, but in 1979 at the earliest.

pecially since the two coalition partners in the government have been divided over this issue?

A-Both have said nuclear energy is essential, so nuclear energy is politically acceptable. Of course, there are other groups, such as the environmentalists and the courts, which sometimes reach different

done about energy conservation? A-For industry, saving energy has always been an accepted fact. Industry has always been forced to save energy because it had to make a profit, to fulfill contracts using as little energy as possible.

But I don't think the government should force people to save energy. It is possible to save secondary energy in the private area by increas-ing awareness of it. But not, as someone has said, by turning off electricity at the peak points of use. If the housewife can't cook at a certain time she will cook the same meal earlier or later.

It is not the function of govern-that no one would do the right ment to create a shortage of things and then divide up the shortage. everything that could go wrong Government must protect available would go wrong and no one work-energy at bearable prices, and this cannot be done if it does not say yes to nuclear power. It cannot say no to power plants so that in a certain year there are shortages. This cannot be the goal of politics.

Q-But many people are still very concerned about the safety of nuclear power plants. A-First of all, radiation from a

plant is far under the normal amount of radiation in the atmosphere. The possible source of dan-

for decades

Holec was established in 1963 with

the merger of several Dutch firms

which had been active in the broad

electro-technical field for more than

Smit Slikkerveer and Smit Nijmegen have been at home around the world

70 years. The products of these

The Holec Group's growth

internationally has been strong in recent years, for Holec, with its

worldwide 7,000 - strong work force

firms - Hazemeyer, Coq. Heemaf.

ger is that men in the plant could pend on nuclear plants for its energy, where will it get the uranium? lose control of the process—but that must be full loss of control and A-There are a few sources in all safety measures fail. That means the Federal Republic, but certainly not enough. So we are dependent on foreign supplies.

dents up to now, no one outside a plant has been injured. The damage has been contained inside.

One of the problems is that nucelar plants have been compared with the nuclear bomb, which is very destructive. A nuclear plant is

Q-If West Germany must de-

Hans Freilaender

Q-And face the risk that these supplies can be stopped at any

A-I think we will come to de-pend on the breeder reactors.

Q-And with them the risk that some people will say the Germans

are making nuclear bombs and have hidden them. Do you think this country would be able to live with this kind of political pressure from, say, the Americans and the

A-I think we could live with it.

with energy for energies



the whole petroleum cycle and alternative energy sources

TOTAL

Compagnie Française des Pétroles 5, rue Michel-Ange 75781 Paris cedex 16 - Tél. 524.46.46.

Holec is an acronym for "Holland" Its policy is directed to selective and experience are strongest. group stands for perfection in electro-technical projects worldwide

The Holec Group is small enough to work well with local firms on all sorts of ventures, yet large enough to have the resources to handle the largest projects single-handedly

Holec has five

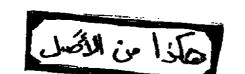
main working groups

 Holec Machines & Systems Holec Switchgear

 Holec Transformers Holec Diverse Products

 Holed Projects Holec Projects combines the basic knowledge, know-how and flexibility within the product groups. It designs, supervises and executes complete electrification, utility and







Interview: Society, Politics, Economy Will Shape Technology

MASHINGTON—Dr. Bruce Murray, who holds a Ph.D. in geology, is director of the Jet Propulsion Laboratory at the Califorma Institute of Technology. Dr. Murray was a Guggenheim fellow and has won recognition for his work on the Mariner space program as well as a number of awards from the scientific community. He has published often on energy technology for professional journals. Here, Dr. Murray discusses the role of technology in energy with J.P. Smith for the IHT.

Mr. Smith-What role will technology play in resolving the problems posed by energy shortages in the years ahead?

Dr. Murray-The right way to look at technology is not necessari-ly what kind of devices are coming along, but rather what kind of economic and political factors loom on the horizon.

There are no easy answers-no technological quick fixes. A more valid question might well be, What are the drivers for technological change?" There are, for example, several interesting drivers that will not only stimulate the development, but the absorption of new energy technologies as well.

Q-What are they? A-First, and quite important is the growing consciousness that we face a shortage unless something is

Second, there is a recognition that very large-scale economic and political enterprises, typitied by the dimensions of the international oil market as we know it today, may be reaching the limits of scale. There are simply a lot of indications that the system is creaking. The economics of scale apply in theory, but in reality they face problems over the next 10 to 20 years. New energy technologiessuch as solar or geothermal-will come on stream because of this.

Q-Are you saying that political factors and economic conditions will force the shape of technologies to a greater extent than most peo-

ple expect?

A-Yes, in a sense. New technologies and refinements of other energy systems which require global or multinational cooperation for their development and utilization may face increasing costs. These higher costs, in turn, become driviers for regional, smaller-scale solu-



Bruce Murray

Q-Could you give an example of regional forces in energy-tech-

A-Yes, geothermal is one obvious example. Geothermal deposits frequently have awkward and significant environmental side effects disposal of brines. At the same time, the benefits of turning to geothermal steam to generate electricity are also retained regionally. The rate at which geothermal energy is developed will in large measure be determined by what the perceptions are of benefits to a given region.

Another example is solar energy, which is a regionally variable resource. The rate of development again here will be governed by re-gional drives, as well as by govern-

On the other hand, the rate at which nuclear, coal and fusion are developed is likely to be less dependent on these regional forces.

Q-Do you think then that decentralized solar systems will be competing with coal and nuclear centralized systems?

The storage question is simply too tem will require that both of them go together. It is more likely that we will evolve a new kind of electrisources or perhaps others. We will either go to a totally centralized electrification grid, much like what we have in the United States today, or a new kind of electric grid that would mix different components. In the end, it depends on the rate at which solar electrification is introduced.

Q-How soon do you expect solar-electrification devices, or, say, photovoltaic cells, to come out of the laboratory and into the marketplace?

A-There are barriers to utilization of solar energy, and I think it is important to understand them. One genuine barrier is the investment that has already been made in pipelines, electrical transmission systems, and large-scale power plants. If we go another 20 or 30 years along the direction of everincreasing generation of electricity from fossil fuels, we may be in an irreversible posture. There may be a point of no return when the capital out ays required to introduce a really different energy technology like solar electric simply exceed what the then more-brittle econocan muster. We certainly are that present a problem, such as a not there yet, but it is difficult to set time scales. Changing into a large-scale use of solar energy is going to take a lot of time. I am not optimistic that change will occur very rapidly unless we can provide positive incentives to various groups and factions, to help them evolve their ways of doing things.

Q-Earlier you said that there is a growing recognition of economic and political limits that could infringe developing technological solutions to our energy-supply problems. Are you talking about nuclear

A-Yes Nuclear power is cer-tainly an example of it. Analysis completed 10 to 15 years ago indicated that nuclear energy would be our best and least expensive source of energy. Obviously, some of these assumptions have broken down because of problems that have surfaced through the political process A-In a sense, yes. However, I and elsewhere, such as siting and cannot conceive of a totally solar-nonproliferation concerns. The reelectric society in the next decades. sult is that nuclear power today is The storage question is simply too being introduced at a much slower unwieldly. A reliable electrical sys- rate than was foreseen, and costs again are much higher than were

Q-How can these problems be cal grid, or system, that mixes coal overcome, what contribution can

ar development?

A-Waste disposal is a critical question that affects not only siting but the question of proliferating nuclear weapons. It is imperative. I believe, that we develop nuclear vaste-disposal systems that can be

technology make to overcoming these political limitations on nuclesupport and acceptance for nuclear technology. Obviously, some countries will respond to these questions at a different rate. The United States now, for example, is moving away from developing nuclear power in a sense, while others, in my view, are embarking on a wide-spread nuclear development with-

along as intended, but the problem will never reach the level of is that the relationship between promise anticipated by its innovatechnology and society has not been anticipated. There is still a nagging credibility gap between the people and industries in countries lution to our energy problems, that

out resolving the waste-disposal gap can be overcome in a positive problem.

Nuclear technology has come of energy—the nuclear business

where it is deployed. Unless this we can expect many small ones?

single answer. What will happenin other words the kinds of technology we develop-will reflect the preferences, expressed one way or another, of the people of various countries regarding their environ-ment, their health, their material

Wind, Water, Wood: Searching for a Better Harness

(Continued from Page 5)

with an estimated energy potential of as much as 64,000 megawatts. Among the most promising are the vern estuary in Britain and the Bay of Fundy in Canada.

But tidal-power stations are very costly, the varying head of water reduces efficiency to less than 25 per-cent and nobody knows the environmental implications of interfering with tidal flows. Although serious thought is being given to a Bay of Fundy development, it is significant that the French are not going ahead with the larger tidal plant they had planned off Mont St. Michel

The exploitation of wave power is considered more promising, espe-cially by the British and the Japanese. Under a plan backed by the International Energy Agency, Ja-pan is hoping to obtain electricity from turbines installed in a buoy out at sea. In this system, the turbines are not driven directly by the waves, but by air pressures created by the waves

The British government is currently examining for hydraulic sys-tems the Salter Duck, the Contouring Rafts, the Russel Rectifier and the Air Pressure Rims Buoy. Under all these systems the force of the waves is converted by hydraulic and mechanical means in such a way that it can power an electricitygenerating turbine. The Salter Duck technique is currently being tested at Loch Ness in Scotland while Hovercraft inventor Sir Christopher Cockerell is experimenting with the Contouring Rafts system in the Solent off the Isle of

Britain's Department of Energy believes that as much as 30,000 megawatts, equivalent to half of

Britain's current electricity consumption, could be met by such wave generators if stretched over 600 miles. But it is easy to imagine the problems of keeping the devices in place and the hazards they might

epresent to shipping.
Although offshore oil technology may eventually make it possible to place such generators out at sea, most existing proposals are con-cerned essentially with coastal installations. Similar experiments are also being considered regarding harnessing the power of ocean cur rents on the East Coast of the United States, but this would probably be even more difficult and expen-

Fascination

What has fascinated French and U.S. researchers, however, has been the possibility of extracting energy from the temperature differentials in tropical seas. With surface temperatures at about 25 degrees Celsius and waters 1,000 meters deep only 5 degrees Celsius, it should be possible to use the difference to

drive a heat engine. The French were the first to show an interest in exploiting what are called thermal ocean gradients when they set up a pilot plan off the Ivory Coast in 1951. However, the work was abandoned after independence.

American engineers suggest that plant should be installed in the Gulf of Mexico. But the small temperature differences would give such plants very low efficiencies and it is not certain whether the idea is financially or technically feasible on a commercial scale. The U.S. government is nonetheless building a one-megawatt demonstration model.

used to provide mechanical energy for small communities has made it second only to solar power as an alternative energy source for re-mote areas, but the very output of most windmills or aerogenerators make it unlikely that wind will ever

make any appreciable contribution to the world's energy needs. The advantage of wind as an energy source is that its power is greatest in the winter months in more reliable materials for the ro areas which do not benefit from much sunshine. This is why it is seen as a compliment to solar energy. With its ability to produce electricity directly rather than through steam as in the case of solar energy, its efficiency is around 35 percent compared to 15 percent. It can be used both as a centralized source of electricity and as a decentralized

Drawbacks

But it also suffers from very serious drawbacks. It can only be found in certain areas, its strength is irregular and the electricity produced cannot easily be stored. Small units can provide very little electricity, while with larger ones the rotors are liable to break. Windmills are noisy, they may interfere with television reception and if used in the size or quantity required to make any significant energy contribution they would be

But several countries are taking wind power very seriously, notably Sweden, Denmark, West Germany and the United States. Denmark has just completed a two-megawatt windmill at Tvind, the world's largest unit. The biggest previous unit was a 1.25-megawatt U.S. machine abandoned soon after it was put into operation after World war II. The ease with which wind can be

West Germany are all planning three-megawatt models. In a report published by Britain's Department of Energy it is claimed that mega-watt units are now competitive with conventional power plants in mean wind speeds of over 14.5 knots. Most countries are still sticking to the conventional horizontal Datch windmill design. Their research ef-

tor blades. Thanks to experience from the aircraft industry they are developing new materials in steel and fiberglass.

The Canadians, followed by the Dutch, are working on a vertical windmill called the "Darrieus rotor." The advantage of this technique is that the same power can be

obtained with a simpler and lighter machine, but, according to Dr. Dieter Renz of the International Energy Agency, it is not a self-start-ing windmill and requires high velocity winds.
Wind power, like solar energy, is

ideally suited to Third World countries. It offers the possibility of mechanical energy for water pumping or corn grinding as well as electrici-ty in areas which are not connected to a national electricity grid. Unfortunately, wind conditions are often not suitable in many developing countries that have little wind most of the year and monsoons the rest of the time.

Wood -

In developed countries with win-dy coastlines, wind power could become a reality, but the presence of hundreds of aerogenerators is only likely to be aceptable in the most

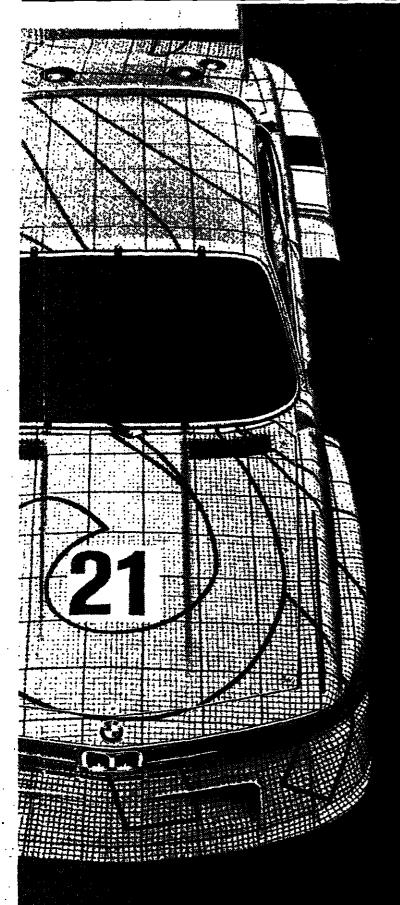
Until the 18th century, wood or charcoal was the only heating fuel The United States, Sweden and used by man. Even today most de-

veloping countries rely on wood for cooking and heating. Often the use of such fuel is not even recorded in statistics because it is collected by the users themselves. But wood is only one example of how man can trap solar energy from plant life

and organic waste as a whole. The useful energy contained in wood, plants and organic waste is the result of photosynthesis. Under this biomass process, plants absorb some of the sun's energy as they build up their carbohydrates. Scientists have realized that man might do better allowing plants to collect solar energy for him rather than go to the trouble himself.

Man has merely used whatever Farmers might burn their straw, local authorities have produced gas from a town's waste products, Indian peasants burn cow dung for cooking. But with the growth of interest in new energy resources, countries like Sweden and the United States and Canada are trying to develop fast-growing trees. Brazil is producing methano from sugar cane and manioc, and China and India are turning cow dung into gas for cooking purposes. Experiments are being carried out into growing "forests" of algae.

But the possibilities of biomass are limited. Photosynthesis is inefficient, with plants absorbing only 2 to 3 percent of the sun's energy. The space required for growing plants or trees must compete with land for food production, and harvesting is generally more trouble than it is worth. In developing countries, where labor is cheap and there is plenty of poor-quality land available, biomass might have a role to play—but if food can be grown, it will surely be the main priority in these countries. __M.P.



Competition improves the breed.

BMW are among the few car manufacturers who have a long tradition of involvement in motor sport. Constant testing on the racing circuits of the world has significantly improved the character and performance of all BMW products. For the perfection demanded by racing leads to new ideas, meticulous attention to detail and ever increasing quality. Victory only goes to those who can outperform and outlast the competition.

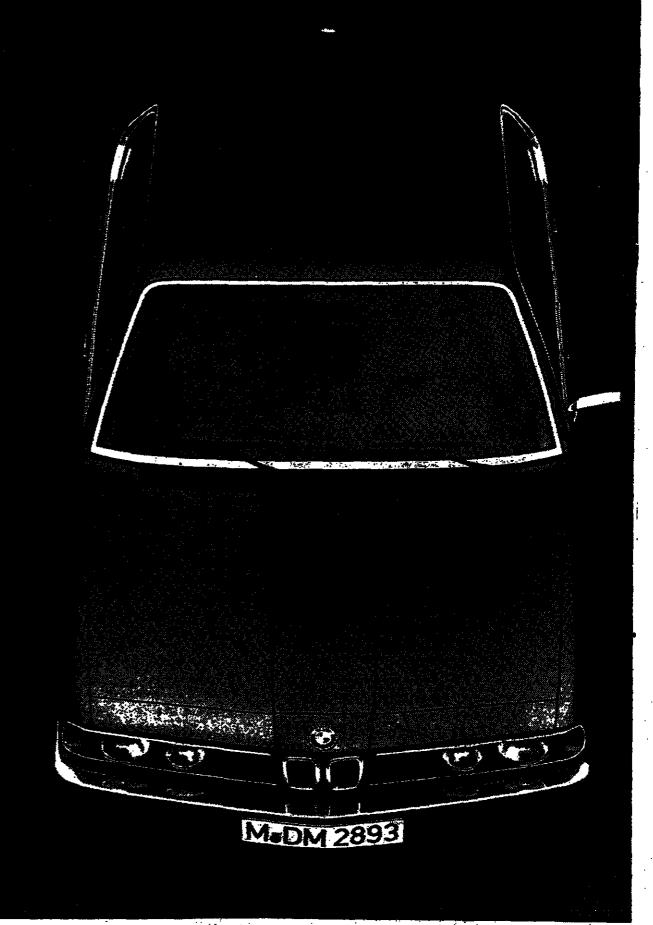
An example of the superiority which is bred by racing experience are the power units now available in the big BMW of the 7 Series. They are sophisticated enough to provide the basis for racing machines, while in production form they combine excellent power and torque with exceptional durability.

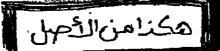
Here, as in all other details of BMW motorcars, we are concerned above all with quality - not just the minimum quality required but the best quality we can achieve. This striving for perfection is something we share with BMW drivers - like them we are only content with the best.

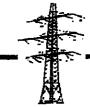
BMW cars

The BNIW range of fine automobiles: the ultimate in performance, comfort and safety. Designed for the man who appreciates the

BMW - Sheet driving pleasure







U.S.: Search for 'Quick Fix' Like Another Moon-Shot Project

By J. P. Smith

WASHINGTON—While there are a few eddies of skeptiism remaining in Washington about the severity of the energy problem over the next decade, there is collective agreement that some-thing must be done if only because of sharply higher oil prices

That something, inevitably, comes down to the quest for new energy technology such as cleaner burning coal processes, solar energy or simply a much more efficient automobile.

Not surprisingly, this push for "a technological quick fix," as one member of the Senate Energy Comnearly sevenfold increase in the U.S. government-backed research and development effort over the last four years.

Set now at \$2.7 billion, the government's energy research-and-development budget is one of the largest in the government-second only to military research efforts.

Inevitably, during political frays over solving the energy problem, people are quick to compare the energy-posed challenge to President John F. Kennedy's charge to send a man to the moon.

One man who disagrees with an

Apollo approach to developing a into the market depends in large new generation of energy technolomeasure on private industry. gy is Dale. D. Meyers, former head of the manned space program, now

of the manned space program, now undersecretary of energy.

"The business of energy R and D is not as simple as something like putting man on the moon," Mr. Meyers said.

Asked what kind of technology private industry should be in search of, Mr. Meyers says the "new technologies must be lean and simple, without sacrificing usefulness...We don't have the time to make our technologies perfect or luxurious. We only have time to make them serviceable and safe."

Since the quadrupling of oil prices during the 1973 Arab oil embargo, there has been a shift in the direction of the government's energy R-and-D program and its technoloobjectives. Nuclear energy,

part of the picture, and that the ing suit.
task of bringing new technology Utilizing urban waste—in

International

Energy Bank Limited

Windhester House, 100 Old Broad Street, London EC2M IBE

Telephone: 01-638 3588, Telex. 8811511

883458 (Foreign Exchange)

The specialised bank

for financing energy

requirements worldwide

shareholders

Bord of Stational Barray & Warms to obliga Bank International Ltd. Concedent Imperial Bank of Commerce,

Republic National Bank of Collact Freu philips subsidiary) Societé Friancère Europeenne SFE.

Because of this, they are weighing incentives such as loan guarantees, cost sharing, price guarantees or government purchases of items such as photovoltaic cells—that order to lower development costs. Another major factor, Mr. Schlesinger says, is the impact of government regulations on areas as diverse as building codes, tax cred-its, or efficiency standards.

Because of mileage efficiency standards enacted into law in 1975. for example, new American cars are expected to hit a 25 miles-pergallon standard by 1985.

Consequently, energy forecasters expect U.S. gasoline consumption to rise annually through the early 1980s, then level off and eventually decline, despite the fact that the towhich once dominated the funding, has now fallen off slightly. Instead, emphasis has shifted towards perfecting clean-burning coal process-ally are 10 percent more fuel effies and realizing the promise of so- cient than conventional gasolinelar energy.

Mr. Meyers and Energy Secretary James R. Schlesinger admit the government's role is only and Ford and Chrysler are follow-

essence, energy from garbage systems—is another promising source.

J.F. Berhneisel, head of the Nacials, among them President

tional Center for Resource Recovery, Inc., estimates that up to ! quadrillion British thermal units a amount of money that private inreis in oil savings—could be generated by burning urban wastes infuture," Dr. Press told an interated by burning urban wastes in-stead of liquid fuels, as well as through energy conservation resulting from recycling energy-intensive products such as aluminum.

before the energy from waste burn- propeller manufacturer.

Carter's science adviser, Dr. Frank

viewer recently.

One example of promising R and oducts such as aluminum.

D. spurred in large part by the higher price of aviation fuel, is an idea being pursued by Lockheed Nevertheless, it will take 10 years

One chamble of promising A and the price of aviation fuel, is an idea being pursued by Lockheed Corp. and Hamilton Standard, a

During the 1950s, Lockheed pro-duced civilian and military versions of a four-bladed turboproppowered aircraft that was quite successful, although it was later overtaken by faster jet aircraft. Tur-boprops were put on the shelf.

Now Lockheed and Hamilton Standard, in search for an aircraft that will use less fuel, are testing a prospective aircraft design using a small-diameter, eight-bladed pro-peller that has been wind-tunnel tested at flight speeds of up to 530

Lockheed engineers and the Na-tional Aeronautics and Space Ad-mi istration say that successful devel pment of a high-speed tur-borrop could shave up to 30 percent off the fuel demand of current high-speed jet engines.

Another unexpected shift in energy technology is the burgeoning interest in harnessing energy from the country's estimated 50,000 small-scale or so-called "low head"

Springfield, Vermont, for example, has approved a \$58-million haven't we?" he says.

electric generating plants on the town's six dams, forming a municipal utility that would ultimately displace the local investor-own

"Small hydroelectric plants could provide up to 25 percent of New England's power in the dec-ades ahead," says Energy Deparment undersecretary John F.

"We have come full circle

U.K.: On the Frontier of Offshore Advances

By Roy Eales

L ONDON (IHT)—Above the slopes of northern Yorkshire stands a symbol of Britain's growing preoccupation with energy. It is the experimental "aerogenerator," or, to lapse from the jargon, the windmill of landowner Sir Henry Lawson-Tancred.

Glowing reports from news-hungry energy correspondents who trudged over windy Yorkshire to witness this recent resurrection of ancient energy technology verify that the windmill should have its rightful place in the energy debate. But, alas, it will be a mere dot on the nation's future energy land-

The government's energy department forecasts that £83 billion (\$158 billion) might well be spent in Britain between now and the year 2000 for energy technology. But of that total, a mere £250 million to £500 million (\$475 million to \$950 million) is allowed for alternatives such as wind, sun and geothermal power.

By any standards the prospective energy technology spending sums are large. But already energy is rapidly becoming Britain's super industry. U.K. government estimates say it represents more than 16 percent of total United Kingdom capital investment. At last year's £3.6 billion rate (\$6.8 billion), it was more than twice that year's total manufacturing investment in the United Kingdom. Energy employs 750,000 or 3 percent of the working population, pro-ducing a turnover of more than £13 billion (\$24.7 billion), about 5 per-

cent of the gross domestic product. So far Britain's offshore oil and gas reserves are producing most of the advances as well as consuming most of the spending on energy technology. And they will for the next 10 years, say energy experts, until nuclear electricity and coal developments get underway to re-

metric tons of oil reserves and 809 billion cubic meters of natural gas now involves spending of £2.4 bil-lion (\$4.5 billion) a year and em-ploys more than 100,000.

The North Sea program could cost up to £60 billion (\$114 billion). says the oil industry's U.K.
Offshore Operators Association.
But it will be worth every penny. It
means that Britain will be self-sufficient in oil, as it now is in natural

are so luxuriously endowed with indigenous energy.

As the world's major current development of offshore energy reserves, it is not surprising that it is also the seedbed of technological development. Oilmen like to say this development has taken them to

the frontiers of oil technology.

To cope with the North Sea's violent 90-feet waves and 100-knot winds in water depths down to 600 feet, the industry has been forced to mount an array of new technology that will be good for exploiting other offshore areas worldwide well before the North Sea has given up all its oil and gas.

The list is long-computer-con-trolled oil production from the world's biggest steel and concrete platforms to intricate techniques for sub-sea welding, pipelaying, pollution and corrosion control. An unorecedented 450 miles of largediameter pipe has been laid on the seabed through which the oil is pumped ashore from 14 commercial oilfields. In addition, natural gas discoveries have forced the construction of a completely new industry which is now considering a £5 billion (\$9.5 billion) project for the 1980s. This will mop up new and surplus gas reserves through an offshore gas gathering pipeline net-work which will provide new supplies worth 35 percent of current gas consumption. Amazingly, to date there has been no major oil or

gas pollution off British shores. But the oil and gas will not last forever. State and private energy planners concur that reserves could start to decline in 15 to 20 years. To prepare for that day a vigorous debate is underway about how to fill billion) spending program to devel-op Britain's 300-year life span coal reserves in tandem with nuclear

Unlike the oil and gas develop-ment, virtually all of this sum will come from the public purse as the coal, nuclear and electricity industries are state-owned and operated. Here's how the energy department envisages the future energy technol-

ogy breakdown:
It forecasts that total spending
on energy technology will average
its current £3.70 billion (\$7 billion) level to 1980, with oil and gas takountries by 1980. ing a 65 percent slug, electricity generation 25 percent and coal the

about 75 percent of Britain's total rest. But as oil development tails certain to go ahead after a long concerning requirements in only two off in the mid-1980s, electricity will public inquiry last year. But opposed the over a 60 percent share and strong the public inquiry last year. But opposed the over a 60 percent share and strong to the plant is growing and environmentalist and peace organically. continue to the year 2000 with annual average spending building to a peak of more than £5 billion (\$9.5 billion) by then.

The non-oil and gas development is expected to be largely conventi-onal such as additions to coal production and nuclear power stations. Among the smaller options are im-proved techniques for energy conservation and wave, wind, sun and geothermal power: all of which are destined to add only marginal amounts of energy. Britain has still to decide on whether and when it will opt for development of the fast

In the meantime, the most controversial energy development in Britain right now—the proposed £600 million (\$1.14 billion) plant to reprocess nuclear fuel at Windscale, northwest England-looks

Less grand and controversial technological projects taking place now will also help fill the gap in the

For example, Britain has spent 52 years studying the feasibility of building a barrage across the River Severn estuary of western England, to generate electricity from tides. And now it might happen. The energy department reckons the barrage would cost £3.7 billion (\$7 billion) to build and produce I percent of U.K. energy demand. It will take 20 years to build if the department finally sanctions the project.

There is also development of synthetic gas from coal which in-

volves work on 16 grades of coal h the British Gas Corp. and the U.S. Continental Oil

Then the National Coal Board is endeavoring to produce a fluidized bed boiler that will make coal burn more cleanly and efficiently in power stations.

In Wales, the nation's Central Electricity Generating Board is building Europe's largest pumped storage power station using two lakes, one 1,000 feet above the other. Constant flows of the water between the lakes will ultimately provide an endless power supply-enough to meet all of Wales

Finally, Rolls-Royce has found something else to do with the supersonic engines it built for the Concorde. By 1981 it plans to have ready a three-ton version of the Olympus 593 designed to supply the electrical needs of a mediumsized town.

And then there's the windmill

Brazil: Efforts Bearing Fruit

R IO DE JANEIRO (IHT)—Few countries in the Third World have made such efforts to develop their national energy resources as Brazil. Within the last five years the government has launched a major oil exploration program in the country's offshore, stepped up its hydroelectric investments, moved into nuclear power with the help of the West Germans and embarked

on a nationwide survey of the country's mineral resources.

giant gasification plant around their southern coal deposits, are considering the construction of a 20,000-barrels-a-day shale oil extraction plant and exploring the possibilities of tapping the country's limitless solar potential. In characteristic Brazilian fashion the government is confident that with modern technology and sufficient

lems can be solved. When the Arabs quintupled their oil prices five years ago, the situa-tion did not look so promising. Al-though Brazil did secure 20 percent of its energy requirements from hydropower, it had become dan-

capital the country's energy prob-

represented 46 percent of its energy demand. With 80 percent of this oil having to be imported, the foreign exchange cost soared from \$470,000 in 1972 to \$3.8 billion in 1976. With coal only supplying 3 percent of the country's energy requirements and the role of firewood, bagasse and charcoal declining, the country's situation looked

But subsequent efforts are now While other countries have tended to shy away from the more unconventional technologies, the Brazilianade a series of offshore finds inthe gap. Vocaferous anti-nuclear environmentalists and conservationvast campaign of turning sugar field, which started production last vironmentalists and conservation-ists apart, the strategy most widely accepted is for a £50 billion (\$95 mixing with gasoline, are building a oil companies to join in this explorewarded with a discovery by British Petroleum.

Progress in the coal sector has been modest with annual output still little more than three million tons, but exploration has revealed the existence of 30 billion tons of recoverable reserves in the south and 60 billion of lignite in the Amazon. The first Brazilian nuclear plant, a 626 megawatt Westinghouse model, is due to come onstream this year, but the first of eight 1,300 megawatt reactors planned under the controversial deal with West Germany is not due to come into operation before 1983.

gerously dependent on oil, which Sufficient uranium and thorium reserves have now been discovered in the country to assure national self-sufficiency, at least with fastbreeders.

> In the hydroelectric field where Brazil has only tapped some 15 percent of its potential capacity of some 150,000 megawatts, giant projects like the Tucurui dam in the Amazon and Itaipu on the Paraguay border should bring the country's capacity to over 50,000 mega-watts in 1985, three times 1972 levels. At an electrical research center in Rio de Janeiro (CEPEL) work is being carried out on reducing transmission losses over long distances.

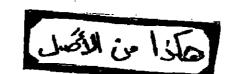
great things from its national alco-hol program. With the help of some 80 projects which have now been ing for a 1980 production of four billion liters, more than a quarter of the country's current gi consumption. Most of these plant will be based on sugar cane which can produce 65 liters for every ton, but eventually distillers may turn to much as 200 liters for the same weight. Already some motor vehicles in Sao Paulo are being driven

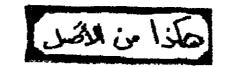
on a mixture of gasoline and this

Ruhrgas in the Internationa Energy Market Ruhrgas supplies natural gas to a large market in the Federal Republic of Germany. A complex pipeline system carries the gas to the customers. Ruhrgas has concluded a number of major natural gas import agreements and is currently involved in other natural gas import projects. Ruhrgas is a partner of standing in the international natural gas business. RUHRGAS AKTIENGESELLSCHAFT - ESSEN











East-West institute near Vienna

called the International Institute

He said that the Soviet Union, unlike the United States, will prob-

mate that as much as one-fifth of all new installed generating capaci-ty in the Soviet Union during the

current Five-Year Plan will be ac-

Current research and develop-

ment is being concentrated on a

fusion reactor which produces elec-

tricity and also nuclear fuel for

conventional fission reactors. The

work is going on at the Kurchatev

counted for by nuclear power.

Soviet Union: Fuel Exports Pay for Progress

By Douglas Sutton

MOSCOW (IHT)—The subject of the Soviet Union's energy production capacities has in the past year been debated in various Western circles—with predictably various opinions.

 $vdr_{0clec_{\Pi_{k}}}$

up to 35 k

Is power is save Energy

Valuonal Cog.

to produce if at will make y and effe-

the nation.

Denerating 1 ope's larges er station t 1,000 feer to

int flows of:

lakes will t

ndless power

olls-Royce b

ise to do ;

ngines it but 1981 it plan

ction verse

3 designed t

here's the way

: now been &

ry to assur:

cy. at least of

iroelectre lië.

ly tapped some

potential ag io megawat the Tacurude l Itaipu որ բ should bringt / to over 50,00 i, three times? retrical resent neiro (CEPELi र्घाणाळ ह

nent is also a With the below which have # ie government 80 production , more than a Most of the i on sugar 🖼 65 liters for 64 v distillers 🛒 th can manufi O liters for # ndy some mon

A pessimistic outlook, such as that of the Central Intelligence Agency last year, predicts that despite its vast resources, the Soviet Union may become an importer of oil in the early 1980s. More opti-mistic observers believe that Soviet production of energy fuels will continue to keep pace with both its own energy needs as well as its export targets, at least through the

next decade.

Regardless of which view turns out to be correct, two things seem at this point to be certain:

 As in the past, the Soviet Un-ion will, to a large extent, import sophisticated Western technology to supplement its energy resources.

• The Soviets will continue to use the hard currency it earns from fuel exports to the West to pay for imports of Western energy techno-

Other Sources

While the backbone of Soviet energy production will continue for some time to be oil, natural gas and coal, the Soviets are nonetheless doing serious research and development in a number of other energy areas. These include fusion reactors, solar and wind power plants, magnetohydrodynamic (MHD) and cryogenic generators and

Moreover, due to the sometimes unique—and often difficult—geographic conditions of climate and distance, Soviet scientists are working on further improvements on drilling, mining and transportation

Firsthand analysis of the current state of Soviet energy production technology is rare. Few Western industry specialists are allowed to vis-it oil, gas and coal mining sites. Those who do succeed in making on-site inspections are usually representatives of Western firms hoping to sell equipment to the Soviets.

One such company representative, a sales engineer with a major U.S. oil equipment manufacturer, said, "From what I've observed, the Soviets are anywhere from 10 years behind in drilling technology to 15 be functional by 1980, an increase methorpe in Britain, the planned participate in a wide range of re-

to 20 years behind in offshore of more than 20,000 miles from know-how."

He added: "There's no doubt that some of the purchased Western equipment is not for use in the field but rather is taken apart in some laboratory to try to copy the technology that has taken us 25 years to develop."

One reason the Soviet Union can

spend a lot for Western equipment is that it earns a lot in exports of oil and natural gas to the West. in 1976, for example, energy fuels ex-ported to the West brought in reve-nues of an estimated \$5 billion.

That the Soviets are interested in more Western oil and gas equip-ment, and that Western firms are more than willing to sell to the Russians, is beyond doubt. Last fall, for example, more than 130 U.S. companies—practically a "Who's Who" of the Texas, Okiahoma and California oil and gas drilling industry—staged a nine-day exhibi-tion in Moscow in hopes of win-ning future multi-million dollar

Several of those companies just recently landed contracts worth more than \$20 million for drill rigs and medium-pressure sour and sweet gas well equipment, while others continue negotiations for a variety of geophysical surveying, drilling and offshore equipment-

and technology.

However, it would be misleading to say that Soviet engineers have not come up with their own developments in the oil and gas equipment field. One fairly sophisticated piece of equipment that the Soviets have developed is, for example, the

Unlike rotary drills, in which the entire pipe shafting is rotated from above ground during drilling, the turbodrill is located at the digging end. It drives only the drill bits while the piping above remains sta-

Turbodrilling accounts for at least three-quarters of all Soviet oil and gas drilling. Engineers are ng to improve the turbodrill's capabilities in heavy muds and high temperatures while also increasing the depths-beyond 15,000 feet-in which turbodrills can operate effi-

Soviet development efforts are also directed toward pipelines. The current Five-Year Plan calls for a

New technologies are being developed to try to overcome the problems posed by the great dis-tances and the severe geographic and climactic conditions. In the experimental stage is a method for ac-celerating natural gas to speed up deliveries from Siberia to the European part of the Soviet Union. The method involves freezing and compressing natural gas into a snow-like substance just 1400 of the orig-mal mass, and then putting it into containers which can be whisked through compressurized 2-114meter wide synthetic pipelines at speeds of 150 mph.

Pipeliner

Soviet engineers have also begun using a method for anchoring pipelines in water-filled areas in the Tyumen Province in western Siberia. Instead of using heavy iron or reinforced concrete collars to hold pipelines in place, the Soviets have come up with much lighter anchors which can be shot into the ground in harpoon style.

Another new development is the inspection of oil pipelines buried in remote regions using an infrared detector—from an airplane flying at 3,500 feet. The heat-sensitive detector can locate pipelines, evaluate the heat of the crude oil inside and provide other data for repair work. While the Soviets have been importing Western equipment to conduct seismographic surveys of po-

From what I've observed, the Soviets are anywhere from 10 years behind in drilling technology to 15 to 20 years behind in offshore know-how."

models^R

ergy supplies.

tential oil and gas fields, expen-mental work is also being done to develop new methods. One was reported by the Ukranian Geological Institute in L'vov, in which a laserbased method of using holograms was being tested to convert conventional seismic data into graphic form. If the technique proves suc-cessful, it could facilitate the work

of some 40 computer centers now being used to analyze seismic data. Despite the fact that the Soviet Union, particularly in various regions in Siberia, possesses huge oil and natural gas resources, Soviet planners have to consider the country's long-term energy needs and are busy looking into and developing other sources of energy.

One Soviet scientist, Yuri D. Kononov, said that "the share of nuclear energy will increase over the long-term, while hydroelectric power output should hold its pres-ent share, increasing at about the same rate as overall energy output

Mr. Kononov is currently at an

experimental fusion device in which a power output from plasma confined in a magnetic field has reached 450,000-600,000 amperes for about a haif second.

Institute with the Tokamak-lii, an

Together with the Electric Power Remearch Institute of Palo Alto. Calif., the Kurchatov Institute will begin work in the early 1980s with a Tokamak-20 test reactor. It will contain deuterium-tritium plasma i at 50 million degrees Celsius for more than one second, according to Eastwes! Markets, a Chase Manhattan Bank publication on East-West trade.

for Applied Systems Analysis (IIASA). With other scientists, he is working on what he calls "impact The newsletter said that U.S. sci--computer studies of the potential impact on national econoentists are interested in the Tokamies of investment of materials and manpower in developing future enmak-20 because it could offer a possible alternative to fast-breeder

MHD

ably not go into large-scale devel-opment of solar power, "due to our geographic position and because we have many other natural resources." Western experts esti-Another joint U.S.-Soviet project is in the development of magnetohydrodynamic (MHD) power generators. They may be able to convert fuel into electric power at 50percent efficiency, compared to the 20-40-percent efficiency of conven-

Testing is scheduled to begin this year at the Sovie; High Temperature Institute near Moscow with a 4-Tesla superconducting magnet delivered last summer by the Ar-gonne National Laboratory in Illinois. The 60-ton magnet will be used in experiments with a Sovietbuilt natural gas-powered 300-megawatt MHD pilot plant.

Under a reciprocal arrangement, the Soviets will later take part in tests at an end MHD research facility to be built in Montana.

Also in the field of generators Soviet scientists have been experimenting with a super-cold cryogen ic generator at the Research Institute for Electrical Equipment in Leningrad. The generator's rotor is a cryostat made of niobium titanium alloy that is continuously fed by liquid helium which keeps temperatures at near absolute zero, thus providing high conductivity and fuel conversion efficiency. The generator has an output of 1,000 kilowatts, but Soviet scientists believe that the cryogenic technology n the can lead to generators producing 2,500-3,000 megawatts or more.

M.P. with at least 90-percent efficiency.

The main and auxiliary cycles for the energy

construction and size. KSB are able to offer a comprehensive pump programme for all applicutions. We supply the pumps for same of the largest nuclear and fossilituel power stations at present being commissioned or under construction The technical quality level and rehability of our pumps are based on many decades of experience, intensive research and development and modern test methods combined with

conversion processes in thermal power stations

require pumps which vary widely in design.

extensive quality control In 1905, KSB developed a may section bown fred pump for a discharge pressure of 40 bar. In 1955, KSB supplied pumps for the first European research reactors

Today, KSB pumps are operating in nuclear stations with a variety of reactor systems. KSB provide reliable pump technology for all power station cycles.

KSB are ready for the future fully equipped with the technology to meet the most stringent. requirements and backed up by a fulf-load test bed for main coolant pumps up to 13 MW drive



Consumer Countries Pool Research

(Continued from Page 1)

\$200 million. Since the first agreements signed at the end of 1975, the agency now tallies nine projects in coal, seven in energy conserva-tion, one in nuclear safety, one in geothermal, six in solar, two in wind, three in fusion and one in hydrogen production. The agency has no projects in the oil field.

The areas that receive the most funds from governments are coal, fusion, conservation and hydrogen, with the United States, United Kingdom, West Germany and Sweden among the most generous con-tributors. Among the more spectacular projects are the fluidized bed

cooperation between the United search activities otherwise not States and West Germany in the available to them.

gasification of coal, the decision to build two 500-kilowatt solar-powered plants in Spain, the costly and preferential toyalty treatment fusion research being carried out in on techniques being developed in the United States and West Germany and plans to manufacture hydrogen with the waste heat of nuclear reactors at Ispra.

Participation

Given the choice, most governments prefer to carry out research on a national rather than an international scale. However, the exis-

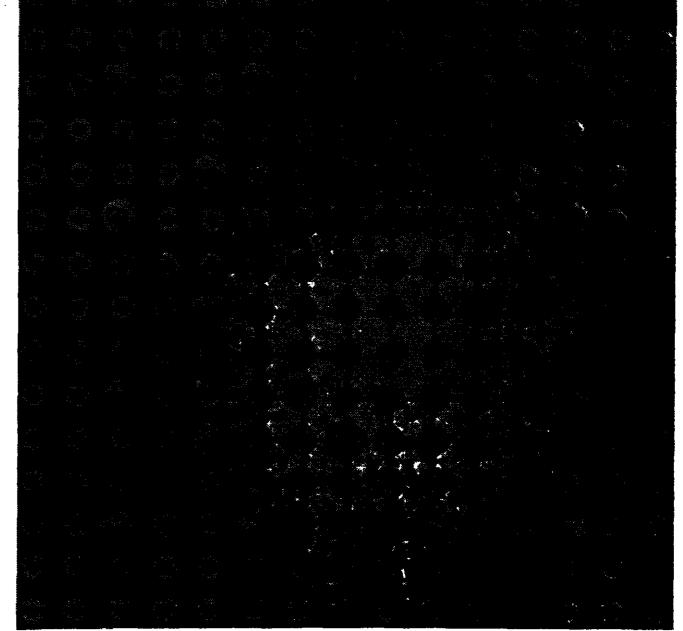
bottlenecks that particularly affect the Nine can be removed. In the long run, however, funds required for the development of

conventional and new energy sources-the \$250 million or more currently being spent each year within the framework of these two tence of organizations like the EEC organizations—is but a drop in the



URANGESELLSCHAFT

D Frankfurt am Main



Raw Materials Energy Environment

Three technical terms turned into every-

day words. Metallgesellschaft has always been in the forefront of know-how development. A century of experience in prospecting. exploration and marketing of metals; research and metallurgy; manufacture of high-quality semi-finished products; devetopment, planning and design of industrial plants incorporating the latest state of technology; development of new engineering and chemical processes; group-integrated transport, banking and insurance

An ideal basis for cooperation with our partners in nucleonics.

Proneering achievements in metallurgy and the creation of new materials for use in nucleonics are major contributions made by our metallurgical laboratories. Top-grade reactor cladding tubes and semi-finished products made of zirconium alloys for use in reactor fuel elements and other components of the reactor core are the specialty of VDM Zirkonium-Gesellschaft, tubes made of special steels and allovs that of our Tubes Division, a part of VDM. The LURGI-Gesellschaften develop and design industrial plants for nuclear processes and environmental protection. ANTITRON and VZW play a decisive role in radiation protection. URANGESELLSCHAFT, engaged in exploration and mining of uranium deposits worldwide, and a major supplier of natural uranium, is one-third owned by the group.

The Supply of Raw Matenals The Production of Energy The Protection of the Environment The Priorities of Our Age

The Priorities of Metaligesellschaft

METALLGESELLSCHAFT AG Reuterweg 14 D-6000 Frankfurt am Main





West Germany: Resource Poor, But a Leader in Technology

By Thomas C. Lucey

FRANKFURT (IHT)- While West Germany may be poor in all its energy resources except coal, it is rich in energy technology. This includes technology for fossil fuels and nuclear energy as well as for fuels whose time has not yet

Laser enrichment, a shortcut to highly enriched uranium, is being intensely researched in the United States, France, Great Britain and Israel German work in this area started in 1971, with basic research at the Battelle Institute in Frankfurt. Uranit Juelich, a company in uranium isotope separation, has supported this work with government funds and, since 1973, has given contracts to more research

Uranit, which is owned by companies belonging to two giants in the German energy field, VEBA and Rheinisch-Westfaelisches Elektrizitaetswerk (RWE), is a member of Urenco/Entec, a German, Brit-ish and Dutch joint effort to collaborate in uranium enrichment by

gas centrifuge.

Last month, Uranit announced its selection of Gronau, near the Dutch border, as the site for a 1billion-deutch-mark (now worth \$500 million) gas centrifuge uranium enrichment plant. The Gronau plant is expected to be ready in the early 1980s, supplying enriched uranium to about eight nuclear plants of the Biblis type.

Kraftwerk Union (KWU), wholly owned by Siemens and probably construction schedules, other enerthis country's internationally bestknown builder of nuclear plants attention. In 1975, the government (including the 2,500-megawatt one decided that nuclear energy should at Biblis, south of Frankfurt), is supply 60 million tons of oil equivalso said to be engaged in research alent (MTOE) out of a total estimated to the supply 60 million tons of oil equivalence of a total estimated to the supply 60 million tons of oil equivalence of a total estimated to the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence of the supply 60 million tons of oil equivalence oil equivalence of oil equivalence of oil equivalence oil equivale on laser enrichment.

1.000 Degrees

Cie, which supplied what it called the world's biggest transformer for the D.C. Cook 2 nuclear plant in the United States, includes megawatts a year—are attributed to the cook of the coo among its products essential com-

in Juelich, the company conducts high-temperature helium tests of up cal grass-roots opposition.

with Lurgi, although the Frankfurt-based company has competition from a Krupp subsidiary and other companies as well as from expected However, Paul Mentre, the

Lurgi, "primarily in the United estimates of future electricity States and secondarily in Europe, demand-implicitly meeting ecoloas the availability of natural gas gists' criticisms that previous fore-

Low-priced crude oil and rising coal prices in the 1960s caused most plants using the Lurgi process 160 percent since 1973) mean "we

Industry will be willing to pay ing nuclear for fuel-based stations the higher price for coal gas rather in the future." Electricity rates, he than risk interruptions or rationing says, will have to be considerably of their energy supply, Mr. Natus increased and other financial mea-

raised by long tanker routes from the sources, coal gas is even more rather than air in the gasifier.)

(BTU) because of the use of oxygen a new technology to use alternate into alternative fuels for many years. It has found that "hydrogen than air in the gasifier.)

Lurgi has expanded the range of coal sizes, from a spectrum of 6 to 20 mm to 2 to 30 mm and it can use caking coal. During World War II. Lurgi was able to produce 5 million tons of fuel from lignate. (The first work on the process began in 1930.)

Gasifier

The latest model gasifier is the Mark IV, named after its fourmeter diameter. By comparison, gasifiers built by Lurgi in South Africa 20 years ago had a diameter of 3.7 meters, only slightly narrower. In connection with a Japanese (In the gasifier, the solid fuel is put company, DEMAG is supplying a under pressure of 145 to 435 re-injection process for Kuwait so pounds per square inch, using an that the propane gas that is forced oxygen-steam mixture. The clean to the surface by the rising oil is gas that emerges from the process pumped back to bring more oil to has a high calorific value of about the surface.

Despite its long history and wide use, the process does not yet pay its own way. "We are still putting in more than we take out," says Mr.

In the field of gas produced in oil drilling projects include a plat-form-top power plant in the North Sea, planned by Nordwestdeutsche Kraft (NWK), Hamburg, to utilize the gas that has up to now been lost. NWK expects to produce 350 to 400 megawatts with gas turbines and has financial support from the European Economic Community

In connection with a Japanese

Germany is also active in seeking

wagen is methanol. In a test probillies since the combination of
gram, 45 vehicles—among them the
spark-ignition engines and the hyVW Golf, VW bus and Audi 100—
were driven around Germany on a
great problems and because pollumixture of 15 percent methanol
and 96 of 15 percent methanol and 85 percent regular gasoline. In is particularly low. March and February, 1976, the test

The company is fleet drove with pure methanol and bus built on a van chassis with a the methanol-gas mixture in the Arctic Circle.

Pure Methanol

last step.

VW is also interested in using another alcohol as car fuel-cthanol. It can be made from a number of organic substances, including vege-

Daimler-Benz (Mercedes) has Last year, Motoren-Werke been conducting extensive research Mannheim (MWM), an outgrowth

The "fuel of the future" at Volks- offers particularly interesting possi-

The company is testing a mini-60-horsepower engine. On a full tank it can go for about 120 miles. Efforts are being made to double

Mercedes would like to be able Using pure methanol on a regular basis is the company's goal, and this project is now said to be in its public transportation authorities.

"The further development of hydrogen technology could bring about the eventual changeover from crude oil to hydrogen," the

gine itself, the gas exhaust and the tures.) radiated heat.

MWM says this method utilizes the hotel's waste water and used air and reducer the amount of oil needed to heat the hotel by 75 per-cent. The hotel will use an electricthermal pumb, to produce a maximum heating requirement of 1.7 million kilocaleries.

Hot-Dry Rocks

attempt in Europe to use the hotdry-rock process to tap energy is being made in Urach, south of

of the stationary-engines depart-ment of auto inventor Carl Benz's company, turned out its first diesel would be. Geologists had expected company, turned out its first diesel would be. Geologists had expected engine for a thermal pump, to be installed in a 44-bed hotel in the 2,400 meters and use that warmth Odenwald area. The diesel-com- for local heating. (Experiments in presser set extracts heat from the Los Alamos, Calif., failed to find environment as well as from the en- water at sufficiently high tempera-

> The hot-dry-rock process involves injecting water into a widely extended system of small fissures in plutonic rock. The hot rocks heat the water, which is then brought to the surface through a second drill hole. To make the project pay, the heat must be able to be distributed as evenly as possible over several square miles.

The oil crisis caused the West German Ministry for Research and What is believed to be the first Technology to announce that it tempt in Europe to use the hotenergies of the sun and wind as having great importance" and to schmitt-Boelkow-Blohm and linance about 50 research and de-

velopment projects in the following years. The German Society for Sun Energy in Munich reports about 5,000 sun-energy facilities were built in this country by the end of last year—collecting a total of 30 to 35 megawatts, an increase of 20 times those available in 1976. For this year, according to the society. the total could reach 10,000 or 15.000.

Most of the facilities in use are for heating water, buildings and swimming pools.

At a conference of the Solar Energy Working Group (ASE) in Essen last year, information was ex-changed on projects in this field undertaken or backed by some of the best-known companies in this country—Dornier, Hoechst, AEG-Telefunken, MAN (Maschinenfabrik-Augsburg-Nuremberg), Philips, Brown, Boveri & Cie., Messer-

France: Looking From Nuclear to Other Potential Sources

By Vanya Walker-Leigh PARIS (IHT)—Following the 1974 decision to sharply reduce its 75 percent dependence on imported energy supplies, especially oil, France committed itself to Western Europe's most ambitious

nuclear program. But with the delays in nuclear gy sources will be getting increased mated consumption for 1985 of 240 MTOE-involving a ten-fold increase in nuclear capacity.

A 13-MTOE shortfall is now of-The German subsidiary of the ficially foreseen for nuclear elec-Swiss company, Brown, Boveri and tricity in that year. Delays in finishamong its products essential com-by the state-owned Electricite de ponents for technical security in France (EDF) to technical reasons, high-temperature reactors.

At the Nuclear Research Facility
security features and some difficulty in finding sites, often due to lo-

bomachine equivalent in size to a 300-megawatt helium turbine. The Brown, Boveri laboratory there tests the behavior of materials under permanent high temperatures.

Coal gasification is synonymous with Lurgi although the French.

processes being developed by Texa-government's delegate-general for "The market is developing for port of a long-term forecasting coal gas," said Dietrich Natus of group may come up with lowered casts were not based on real needs.

Also, he adds that increasing costs of nuclear construction (up may be more cautious in substitutexplained. And in places like Aussures taken to reduce the EDF's intralia, where crude oil prices are creasing debt burden (now 31.4 bilties of the Solar Energy Commissariat this

lion francs, of which 14 billion francs are in Euroloans). Slammed

The 10-billion-franc-a-year cost of France's nuclear program has been privately criticized by Finance
Ministry officials and publicly
slammed by the National Assembly's Finance Commission. There is also criticism that nuclear gets 1.8 billion francs from the government's total energy research-anddevelopment budget of 2.3 billion

Other problems also loom over

France's nuclear plans. The outlook for long-term uranium supplies is precarious, according to a statement reportedly made the foreign minister to last December's meeting of the Council on Foreign Nuclear Policy. By 1985, he is said to have warned, France will only produce 20 percent of its uranium needs (compared to 50 percent today) while Canada, the United States and Australia could well put tough conditions on future deliveries—in the context of the world uranium shortage forecast by OECD by thenand efforts to buy large quantities from South Africa would spark major problems with Niger and Gabon, where French state and private interests control uranium

According to Mr. Mentre, more aid can also be expected for the 500-million franc research program on deep-sea drilling run by the French Petroleum Institute and the two state-owned companies. A fiveyear research program on enhanced recovery techniques, costing 1.5 billion francs, will soon be launched.

With domestic gas production at Lacq (7 MTOE) declining from 1982, French imports of natural gas will continue to increase strongly under contracts concluded with Algeria, Iran, the Soviet Union, Norway, the Netherlands and, in prospect, with Nigeria.

Solar

spring, solar energy will be strongly being built in Sicily. Mr. Mentre developed, although Mr. Mentre foresees a possible breakthrough doubts that it can meet more than 5 that could reduce production costs

also the major oil firms are working and heat pumps.
on solar-energy technology, togethFrance's well-developed network on solar-energy technology, together with a group of France's leading of solar cooperation agreements industrial firms. Two small solar with Third-World countries will power stations are being built at also be extended. present, with a French consortium participating in a European plant moted by the newly established

percent of French energy needs by of photovoltaic cells in a few years the year 2000.

Not only EDF and CEA, but in output of solar heaters, captors and bring about a marked increase

Geothermal energy will be pro-

public company. Geochale, aimed at equipping some 300,000 to 500,000 homes by 1985, though its contribution to energy needs is seen as marginal.

The New Energies Delegation, overseeing solar and geothermal activities since 1975, sees little prospect for developing wind and wave power in France.

to play an increasing role, however, Of the 13 MTOE "saved" in 1977, 10 million of these were saved by private householders. To meet 1985 energy-conservation targets, annual investments must run at 5 billion francs a year, compared to 2 billion in 1977, says the head of France's Energy Conservation Agency, Jean Syrota. Although the agency has promoted legislation on subsidies and incentives, funded over 130 Energy conservation is expected demonstration projects and con-

cluded 40 energy-saving agree-ments with industrial federations, Mr. Syrota sees the need for new financial mechanisms that would encourage industry to invest in energy-conservation technologies. The agency is credited with persuading the government to halt the spread of all-electric homes promoted by EDF. But Mr. Syrota warns that a major rethinking of energy uses and of real energy

Chinese Export Petroleum for Foreign Exchange

TOKYO (IHT)—If at the turn of harbors. The target for their continue the century oil for the lamps pletion is 1985.

of China helped fatten the coffers

For their realization. China will of Standard Oil, today it is Chinese petroleum exports that have become a key source of foreign exhange for the new Peking leadership in a bid to realize its grandiose plan to create a "modern nation" by the year 2000.

For this purpose, a fuel-andpower directorate has been set up Peking's State Council to build China into a strong power through the use of its oil and coal resources. both for domestic use and for

Heading this top-ranking organ, named the State Economic Commission, is Kang Shih-en, formerly minister of petroleum and chemical

taches to its oil resources is further neck with the Soviet Union. reflected in the creation of a sepa-

mer deputies, will be in charge of developing and exploiting 10 oil and gas fields that are part of 120 at 400 billion barrels. China's new industial "great leap forward"

These projects disclosed by These projects, disclosed by Sinking province in the west to Communist party Chairman Hua Pohai Bay in the east and from Kuo-feng in a 3-and-½-hour report Heilungkiang province in the north to the National People's Congress to the South China Sea.

Kang Shih-en, the newly appointed to the South China Sea. and steel complexes, 30 power stapointed energy czar, has an placed an order with the Japanese tions, six trunk railways and five nounced his objective to catch up Mitsui Engineering and Shipbuild-

For their realization, China will have to earn foreign exhange to pay for the imported plants and the technologies it needs. Oil and coal exports are seen as figuring prominently in meeting this requirment.

Guesses

Foreign estimates of China's recoverable fossil-fuel reserves are at best educated guesses. As for oil. estimates range from the 77-to-90billion-barrel appraisal of the Ja-pan External Trade Organization to an estimated 39 billion barrels made by the U.S. Central Intelli-gence Agency, to 20 billion barrels according to the American Petroleum Institute. With 20 billion barrels China's oil deposits would be 9th in the world, while with 39 bil-The importance that Peking at- lion barrels it would be neck and

An independent American exrate Ministry of Petroleum Indus-tries headed by Sung Chen-ming, puts China's recoverable on-shore formerly chief administrator at the oil reserves at 45 billion barrels pioneering oil field in Taching in with additional offshore reserves at the northern Heilungkiang prov- an estimated 30 to 110 billion bar-

Mr. Sung, one of Mr. Kang's for-er deputies, will be in charge of September that the amount of his deposits have been located from Sinking province in the west to

with and overtake the United ing Co. for two marine geophysical States in oil exploration. He survey ships, with a displacement claimed that in 20 years of oil pros- of 1,500 tons each, at a total cost of

China's oil output in 1975 reportedly amounted to 562 million barrels. Peking's official New China News Agency recently claimed that in the first 11 months of 1977, crude-oil production increased 8 percent and natural-gas output rose 22.3 percent when compared to the corresponding period in 1976. But the news agency failed to disclose production figures.

Knowledgeable sources in Tokyo put China's oil production in 1977 at 1.8 million barrels a day, thus edging ahead of Indonesia. According to U.S. intelligence, more than half of this output came from the ern Manchuria, which is surrounded on three sides by Soviet territory. One-tenth of total production is now believed to be exported.

China's objective is said to be to achieve a production of 8 million barrels a day by 1990.

In order for China to exploit new fields and increase output, specialized pipeline equipment is needed along with sophisticated drilling machinery and the various products necessary to assure the safety of producing wells both on-shore and offshore.

The nation is believed to have purchased some \$50 million worth of such equipment from the United States, Japan and Romania in the second half of 1977. It has recently

pecting and exploration, China has about \$16 million. The vessels will tapped less than one-tenth of the be equipped with magnetometers to basins that are promising sources detect oil, gas and other offshore

These purchases are estimated to have brought the amount to more than \$360 million that Peking has spent since 1972 for this type of equipment. At present, offshore exploration is limited to the Gulf of Po Hai, Hainan Island and undisputed

coastal areas. Preliminary seismic surveys have also taken place over a wide area, including the disputed Spratly and Paracel island groups. Taiwan. Vietnam and the Philippines, as

well as China, have all laid claims to these archipelagos. paraffin content, has the disadvantage of requiring heavy cracking fa-

cilities for refining. The Japanese Energy Agency es-timates China's coal reserves at 100 billion tons with its coal production in 1975 at 470 million tons.

Plans for the mechanization of China's coal mines by 1978, at a cost of \$300 million in mining equipment, have been announced There are an estimated 125 coal mines now being exploited—but much of the coal extracted, being surface coal, is reported to be of

poor quality.

Recent Peking broadcasts have claimed that production at the Kailan coal mines has been restored to a 70,000-ton-per-day

quake of July 28, 1976 that flat-tened the adjoining industrial cen-ter of Tongshan, with a reported loss of 200,000 lives. With the explosions of its own

atomic and hydrogen bombs, China is known to have the technology and know-how necessary to develop nuclear-power plants. But if any of them are planned, under construction or in operation, the fact remains shrouded in silence. On Jan. 22, Yuan Pao-hua, who

was then vice-minister for the State Planning Commission, stated that China would develop its oil, coal, peat, lignite, bituminous shale and geothermal resources, but made no mention of nuclear power.

PER ST

2343 % 3

1 55 41.

Following up on its trade agree-ment with the European Economic Community, Peking signed an eight-year pact with Japan in February designed to split \$20 billion According to Japanese industry equally in two-way trade. Under more than double the imports of Chinese crude from 7 million metric tons in 1978 to 15 million metric tons in 1982.

Japanese purchases of Chinese coal during the five years will range from 5.1 to 5.3 million tons of coking coal for steelmaking, and from 3.3 to 3.9 million tons of steaming coal for power generation.

In exchange, China will buy from Japan industrial plants and technology.

China is also selling oil to Thai-

land and the Philippines. Little information is available on China's capacity to generate elec-tric power, which Peking seems to regard as being of strategic military importance. However, current reports are that thermal power plants level. This mining complex was are being gradually converted from devastated by the violent earth-

BIFEN-INCB

Banque Internationale pour le Financement de l'Energie Nucleaire International Nuclear Credit Bank

THE BANK SPECIALIZED IN SATISFYING THE FINANCIAL REQUIREMENTS OF POWER GENERATION PROJECTS

contact us a

20 rue de la Paix, 75002 Paris, France.



A member of the SFE Group

Which little, sunny country would you expect to make a solar heater...



...that works in cloudy weather too?

It isn't likely to be anywhere else, Because. In a sun-drenched country like ours, it's only natural that we should use technology to capitalise on the solar star's energy output. You see, twenty five years ago we were the people who invented the world's first solar heat collector. Since then, tens of thousands of homes in our country have been enjoying unlimited supplies of hot water. And it's all been"on the sun", so to speak. Soon, there was considerable interest in our products from abroad.

One of the first questions that came up was. "What do you do in a cloudy country

with only a limited amount of sunshine?" It sounds almost impossible. but we went on to develop a solar heat collector, capable of absorbing solar energy, right through the clouds themselves. And in thirty five countries in all five continents, we've proved that it works. Miromit solar heating systems are suitable for private homes. They also provide hot water for complete apartment blocks, large institutions like hospitals, hotels and factories. And when it comes to swimming

pools, they do a pretty heartwarming

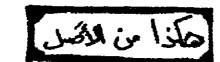
Every year, Miromit helps more and more people to overcome the everincreasing cost of fuel, interested?

For further information, or the name of your nearest Miromit distributor, please contact Miromit Ltd., 8, Matityahu Street,

Bnei-Brak, Israel.

Solar heat collectors. They pay for themselves in fuel savings.





Helo, managers



If industrial plants – especially in the young industrial nations – are to be real economic assets, a transfer of know-how on a wide scale is essential. For without the well-founded skill and knowledge of man, the most sophisticated machines and the most imposing plant will grind to a standstill.

The DIAG - concept of plant installation

Deutsche Industrieanlagen GmbH, Berlin, known all over the world as DIAG, has been one of the great names in the international plant business for over 70 years. The secret of DIAG's success is simple: Insistence on the transfer of know-how as a crucial element of successful industrialization. Based on the vast experience amassed in its own engineering production workshops. DIAG has developed a concept which makes possible the great stride from the turnkey factory to the industrial plant in full production. We have built factories in many countries on the basis of this concept - production units for machine tools, bicycles, mopeds, tractors, crawler vehicles, diesel engines, agricultural machinery, electrical household appliances, filament lamps, batteries and generators. In each individual case, the following prime requirements were given special consideration:

Adaptation to the facilities and necessities of

the client country.

Adoption of new technologies developed during the installation of the plant.

Training of indigenous labour to the status of skilled workmen and technicians and

Responsibility for organization and management during the working-up phase.



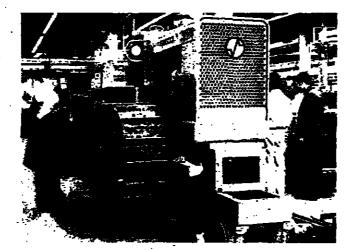
If a plant supplier is to be successful on an international level he must fulfil some key conditions:

He must have wide experience in foreign countries, be familiar with the mentality and level of education in the client country and scrupulously observe its laws. He must adapt easily to climatic

Know-now transfer in the international plant business

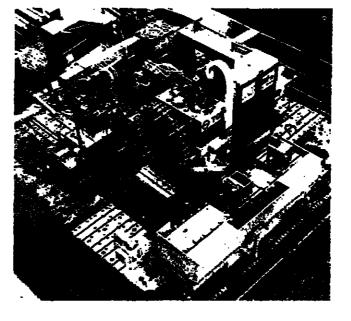
and geographical conditions. All this is purely a matter of hard-won experience. DIAG experts built their first factory in China more than 70 years ago; they have been working for 50 years in Iran, 25 years in Burma and now over 10 years in Algeria. DIAG's turnover in the plant business is fast approaching the DM billion mark.

The manufacture of products with high market expectations necessitates in many cases the procurement of a manufacturing licence. But it is not every big-name licence-holder who is prepared to disclose the secrets of his manufacturing know-how. Unless, that is, the applicant has his respect and confidence...



To have his own know-how is a valuable additional asset for the plant supplier. One who has installed and organized his own manufacturing plant has a decisive advantage over other plant suppliers: The fund of expert knowledge necessary to keep a production plant functioning at top efficiency. DIAG has its own works in Germany: Fritz Werner in Berlin, Hermann Kolb in Cologne and Gebr. Honsberg in Remscheid, These DIAG works manufacture some of the world's finest machine tools, from simple milling machines to articulated transfer lines.

And machine tools are the basis and the indispensable component of most industrial projects.



6000 trainees from 40 countries

No machine can function without people to operate it. This is one reason why DIAG has attached the greatest importance to personnel training from the earliest days. In DIAG's own training centres in Germany or in the client country, in apprentice workshops, industrial schools or technical colleges, young persons from all parts of the world are being prepared for their future vocations under the guidance of DIAG's expert technicians and instructors. Up to now, more than 6000 trainees from over 40 countries have passed through our hands.

Large-scale industrial projects call for a team of experts to take charge, from the first consultations with the client to the final transfer of the plant in full production. Of DIAG's staff of

some 6000, about 2000 are technical experts occupied in the plant business.

Hello, engineers

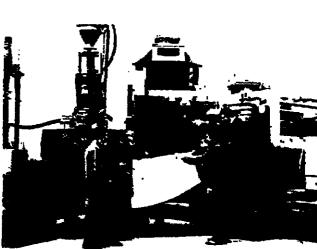


If you would like to know more about this subject, please write to us.

DEUTSCHE INDUSTRIEANLAGEN GmbH

FRITZ-WERNER-STRASSE, D-1000 BERLIN 48, GERMANY

The development of Europe's industry occupied a period of many decades. The know-how of the experienced plant supplier now makes it possible to condense this historic process into the space of a few years. As a result of its work on hundreds of projects in many various branches of industry, DIAG has gathered a vast fund of well-founded experience, which makes it a first-choice partner when it comes to the installation of industrial plants.



Symbol for the future

Four children from four continents symbolize the future of the young industrial nations. In a series of informational advertisements in international periodicals, DIAG is drawing attention to the importance of the education of these children, the future managers, engineers and teachers of their countries. For successful industrialization is made possible only through the transfer of technical and organizational know-how.

That is the central pillar of the DIAG philosophy: DIAG offers knowledge now.

Keys to success

tors.

more and

the ever

rested?

ion,

S

3V-saving a trial federat he need for issue that a returned for the inner to har ament to har tric home:

But Mr. Su for rethinke of real at lace soon.

1976 that is industrial a with a repositions of usuagen bombs (i) we the technol eccessary to the plants. But if incidents under the control of the control

peration, the led in siles

ian Pao-huas

ister for the

ssion, stated t

elop its of a

minous stak.

rees, but made.

in its trade as ropean Eour

king menol

ith Japan of

split \$20 bit

23V trade la

pan will gade

from 7 mit 978 to 15 mit

hases of the

ve years will to

making, and fr

tons of sear

neration. China will t

istrial plans:

elling of to t

ippines.

to generate 2

f strategu mic

rmai power of

lly convened



Israel, Dependent on Oil Imports, Looks to Solar Research

By Yuval Elizur

TERUSALEM (IHT)—With more than a quarter of a million Israeli families already dependent on solar heaters to produce hot water for household use, Israeli scientists are hoping to exploit energy generated by solar ponds for industrial use and for heating greenhouses. Even now, at Tel Aviv University researchers are driving in electric

cars powered by solar energy.
However, Israeli policymakers
are concerned over the fact that, despite progress made here and elsewhere in the use of alternative sources of energy, Israel is still almost totally dependent on import-ed oil. The nation spends close to \$700 million on oil each year. Of even greater concern is the problem of the fuel's availability. At present, Israel is dependent on several sources of oil, the most important one being in the Gulf. There is some worry here over whether all these sources will continue to supply Israel in case of an emergency

or outbreak of war. Thus, the main principle stated in the first outline of its energy policy recently drafted by the Ministry of Energy is diversification. Israel's priorities are to diversify sources of oil and other sources of energy and to concentrate on the development of new technologies. The decision-making process, the policy outline emphasizes, should take into consideration geopolitical, economic, technological, logistic and social aspects. Its main goal is to supply Israel's energy needs in the time, place, quantity and the form most

Special attention will be given, the energy-policy paper adds, to securing the supply of energy in times of emergency. These energy goals will be coordinated with other national goals.

Alma Field

started regular oil production from the Alma oil field in the Gulf of few months production at Alma population live, have access to elec-will reach 10 thousand barrels a tricity. day. By 1979 this local production India's major energy sources are will cover a sizable proportion of coal and hydroelectric power. Ac-Israel's oil consumption, which is cording to a report made by the expected to exceed 7.3 million tons nation's Fuel Policy Committee, toin the correct year

However, the Alma oil field in tons, of which some 29 billion are
Sinai is included in the area that proven, while hydroelectric potenbattery of energy inputs becomes the same time as it is turning out battery of energy inputs becomes

Israel has already agreed to return to Egypt in any peace agreement between the two countries.

Israel is hoping to reduce its dependence on imported oil by increasing investments in oil explora-tion in various parts of Israel and by building power plants fueled by coal and nuclear power.

A plant that will be fueled by coal is presently under construction near Hadera along Israel's Mediterranean coast between Haifa and Tel Aviv. Completion is expected by 1984. The plant will supply about 1400 megawatts, about 40 percent of Israel's estimated consumption of electricity at that time.

Relatively mild protests of local residents and environmentalists against the construction of the plant on this spot have long since been overcome, but it is still not clear how the one million tons of coal a year that will be required for the project will be supplied to the station. Israel has no coal of its own and environmentalists are vigorously opposed to the plan to build a special port at Hadera, where the imported coal will be landed. Earlier plans to transport station on the Mediterranean coast the coal by train from Haifa Port, at Zikim, 40 miles south of Tel

Even more in doubt are the plans conmental reasons.

Technician checks solar energy receptor and reflector in Israel.

miles away, were shelved for Aviv. Here the plan to build a 900

arge stockpiles of oil. In 1976 the appointing. U.S. government granted Israel a Efforts are continuing to solve \$50-million loan for the construction the technical problems involved. tioned for economic as well as environmental reasons.

S50-million loan for the constructhe technical problems involved.
The two large oil refineries at and the Israeli government is alloties. However, they have not yet cating considerable sums from its south of Tel Aviv on the Mediter-

Israel's energy economy to political been fully utilized since some of the pressures, it was decided to create geological surveys have proved disand the improvement of existing storage and transportation facili-

the lowest point on earth.

The canal would have a double purpose. The would be to save the Dead Sea, which at present receives water only from the Jordan River that flows from the north. In recent years the Jordan River has been declining rapidly because of evapora-tion. The second would be to utilize the downward flow of the water for the production of hydroelectric

ranean coast, are already connected by pipelines to the major consump-tion centers in the country. In view of these limitations on

efforts to diversify existing sources

of energy, an increasing amount of attention is now being given to the

development of alternative sources

of energy. Among the plans is a project to build a canal from the Mediterranean to the Dead Sea, which is 1,200 feet below sea level,

Estimates

It is estimated that the Mediterranean-Dead Sea canal could generate an average of 100 megawatts, with power production increasing to 400 megawatts in peak periods at the time when the Dead Sea will be restored to its former level.

Initial estimates of investment in

the project call for an outlay of half a billion dollars. A stearing com-mittee, composed of 45 top Israeli experts, is studying the feasibility

of the project as well as various en-

gineering alternatives.

Fifteen years ago Israel was considered one of the pioneers in research on the use of solar energy. An Israeli invention led to the improvement of solar heaters that provide warm water for home use. in solar ponds, developed in Israel, water can be brought to boiling level and used for generating elec-tricity. An Israeli electronics company, Tadiran Ltd., with the aid of a government grant is at present experimenting on total climate control, which would provide air-con-ditioning in the summer and heat-

ing in the winter from solar energy. A new hospital now under construction in Jerusalem is installing auge solar heaters that will provide it with total climate control.

However, Israeli experts admit that a budget squeeze in the years that preceded the energy crisis in 1973 brought a slowdown in solarenergy research, which may have cost Israel its lead position in the field. In recent years major efforts have been made to close the gap.

In 1978 Israel will spend up to \$12 million, or about 14 percent of all budgets allotted for industrial R and D, on research in energy technology.

Other Projects

A considerable proportion of the budgets, 60 percent of which come from government sources, will be invested in projects involving solar energy. However, there are other research projects, including the utilization of Israel's peat and oilshale deposits and the conversion of agricultural waste to methane gas, as well as a series of industrial projects such as water desalination using a combined system of solar and gravitational energies.

Israel has also recently introduced a systematic program for energy conservation. It is believed that a series of increases in the price of oil, and especially the lifting of subsidies on the price of heavy fuel oil for industry, will induce Israeli consumers to do more to save energy.

While it is not expected that these projects will actually bring a cut in Israel's oil consumption in the next few years, it is hoped that imports will remain almost at their present level, at least for the near

India Pins Its Future on Biogas and Solar Electricity

in its energy situation as India. One of the first countries to enter the nuclear field, it still relies on vegatdung and wind power for nearly Despite the fact that India is the

world's tenth most industrial On March 27 of this year, Israel nation, its average per-capita energy consumption is only 3 percent of that of the United States. Only one-Suez off the coast of occupied third of India's villages, where Sinai. It is expected that within a three-quarters of the 600 million

tal gross coal reserves are 83 billion However, the Alma oil field in tons, of which some 29 billion are

Bombay will increase the country's able waste products, firewood, cow annual oil production potential to at least 20 million tons by the early 1980s-more than half the country's anticipated consumption at that time. Further discoveries may lead to self-sufficiency in the oil sector, even if it is short-lived.

The country's uranium reserves cannot support much more than 10,000 megawatts of nuclear capacity, but with plutonium fast breeders this could be increased 60 times. With the world's largest reserves of thorium at 45,000 tons, India could gain 200 times more with the thorium cycle than with the plutonium

TEW DELHI (IHT)-No countial is 41,000 megawatts on the bameaningless to the average Indian try offers quite such contrasts sis of only 60-percent load capaci- who is lucky to earn 20 cents a day if he is in the monetary system at Recent offshore discoveries near all. Experts say the needs are not ombay will increase the country's costly centralized systems such as electricity grids or natural gas supplies, but the availability of cheap

new energy installations.

After 25 years of Soviet-style development based on heavy industry, India's new government is shifting the emphasis of economic policy to developing industry and agriculture at the village level. Such a policy can be achieved only through the development of new energy sources such as solar power and biomass.

So the country has produced the

strange contrast of developing a prototype fast-breeder reactor at the same time as it is turning out

vert cow dung into methane gas for ers with biogas units, the produc-

on the most sophisticated tech-niques in energy. In the coal field, Bharat Heavy Electricals is devel-pumping and electricity generation. oping combustion-bed boilers at Tiruchirapalli and Hardwar. It is also designing a small low-value coal-gas plant and exploring the possibilities of magnetohydrodynamic (MHD) power generation. In electricity they are experimenting with new turbines.

Villagers

At the same time, the Indians are looking to the needs of those villagers who do not know what electricity is. Research is going into the development of fast-growing trees for future firewood, the conversion of cow dung into methane and fertiliz-

cooking and lighting.

Scientists in India are working fuel and the utilization of solar ention of smokeless coal as a cooking

> A whole range of solar cookers has been developed at the Central Arid Zone Research Institute at Jodpur, with the cheapest unit costing only \$10. A 10-ton-per-day paddy drier has been developed by the National Indian Development Cosp. in Ludniana, while the Indian cheap converters that will provide an Institute of Technology is developing a refrigeration unit for agricultural products.

> A hotel in New Delhi heats its swimming pool with solar energy, a biogas unit and solar-electricity 10-kilowatt solar-power plant is generator that economic developbeing built in Madras in an Indo-

tronics is about to bring out India's first photovoltaic panels.
The National Physical Laborato-

ry in New Delhi is even working on a turbine driven by solar energy

However, the symbol of India's rural energy policy has been the biogas unit. Whereas until now the peasants have burned dry cow dung which damaged their eyes, enough gas from two or three cows for cooking and heating water, lighting and extracting valuable fer-tilizers for an entire family. Many Indians believe it is through the ment will come to the rural poor.

Raw Material Reserves.

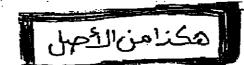
From time to time, scientists and statisticians tell us how long it will be before we have used up the world's natural resources. We are obliged to take these limits seriously, since we have so far discovered no means of replacing the raw materials and energy source's we use today. If they were to run out, our very existence would be threatened. But we have one well-tried weapon in the fight against shortages and

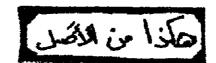
hardship: our spirit of research and invention. At VW, for example, we are investigating totally new propulsion systems which harness different forms of energy to the needs of individual transportation. Pipe dreams, perhaps, at the moment. It is more important right now for us to husband available reserves until these new solutions are ready for use. We are doing everything in our power to preserve the freedom of

private motoring for as many people A 1967 Beetle weighed 800 kg (1764 as possible. We recycle waste products into our production processes wherever this is economically feasible. We have developed engines that make the most economical use of either petrol (gasoline) or diesel oil as a fuel-and we even supply these engines to other leading automobile manufacturers. More significant still, perhaps-today's Volkswagens weigh less than yesterday's.

lb), whereas a 1976 POLO tips the scales at only 685 kg (1510 lb). Does less weight have to mean reduced safety? This might have been the case if safety research and development had stood still. But thanks to the new concepts produced by our engineering team, today's VW models can meet and surpass the most stringent safety regulations. Tackling and solving all these problems hasn't exactly made building cars any easier for us. But it has meant a vast contribution to meeting future problems arising from raw materials and energy shortages. And it has proved again that human initiative is the greatest energy reserve that mankind possesses.









Arabs Counting on More Calories, Not Alternative Sources

By Joseph Fitchett

Solar con DEIRUT (IHT)—The oil-pro-led to the tile world's hunger for energy—are healen tile world's hunger for energy—are healen the world's hunger for energy for home concentrating on how to squeeze loped in home bon resources rather than on how energing to develop alternative sources of enerating to ectronics supply.

with the ... This strategy is hardly surprising. s at present By improving recovery rates in extovide all stretch their own profitable commer and k modity and also lift the planet's ennicolar encountries. n solar or ergy horizon. Another growth fac-Ow under the improved exploitation of natural will pre ral gas, which until now was a discontrol tinetly poor relation of oil.

experts to OPEC analysts are deeply skepti-nergy crist about the industrial countries' down in determination either to curb their while consumption of oil or to seriously down in k consumption of oil or to seriously sosition to cut the development of alternations in major of cloudies. A figure often quoted as oscible ge an effective incentive is \$20 to \$25, gas had nowhere to be piped to, the table of the processory of the processo

tive will then be financially viable gas were pumped and the percent-and the future of cil sales will be age of gas wastage increased. seriously threatened. So far, howevincreases, albeit more slowly. So OPEC governments have concen-

Natural Gas

They have made significant headway. The major breakthrough is the utilization of natural gas, which used to be conspicuously wasted. Often occurring in association with oil (in fact, gas mixed with oil provides the pressure to ported long distances to industrial

to the 1978 price of under \$13 a off or flared. The giant flaming gas barrel.

Once this threshold of economic left black smudges on the sand in incentive is reached, OPEC anadaylight. As oil production in-lysts say, the search for an alterna-creased in the 1970s, more oil and

This waste is ending. The new er, the costs of alternatives have economics of energy have spurred tended to rise along with oil-price most oil-producers to launch giant gas-gathering schemes to harness their natural gas instead of flaring trated on technology applied to oil it. Until now, this gas was too far production—in other words energy from any consumer market for it to conservation practiced at the be marketed profitably. However, the leap in oil prices has meant that gas, as a "cheap" energy source, is being used locally for utilities (Kuwait, for instance, is switching its power/desalting plants to gas from oil) or else as a power and/or feedstock for locally built industry.

As oil production increased in the 1970s, more oil and gas was pumped, and the percentage of gas wastage increased. This waste is ending. The new economics of

energy have spurred most oil producers to launch giant gas-gathering schemes to

harness their natural gas instead of flaring it.

industrialization. At the same time, it has abundant other gas resources which will be processed into liquid petroleum gas (LPG) for easy ship-ment. This LPG, which includes such products as butane, can be adapted for individual heating and cooking and for some petrochemi-

cal purposes. Saudi Arabia intends

Long Pipeline Similarly Iran—whose vast gas ed gas expected to outlast Iranian

under construction, Iran sends nearly 1.3 billion cubic feet of gas daily over the Soviet border, in

launched by MITI. It will concen-

trate on research for the develop-

ment of a high-efficiency gas tur-

bine, an electro-magnetic fluid elec-

Electric Power Co., claims that it

to be the world's biggest LPG exporter in the 1980s accounting for angular gas deal with the Soviet about one-third of international LPG trade.

Long Pipeline

oil—is expanding its massive triangles from its own fields to Western and Eastern Europe.

Algeria is the leader among the oil states heavily committed to gas soon to be twanted with a new one development (and talking about the committee of the committee

forming a cartel to do for gas prices what OPEC did for oil prices). This North African state is investing up-wards of \$20 billion in its bid to become a major gas-exporting Plans are going ahead for the construction of an undersea gas

pipeline from Algeria to Western Europe. It will run through Tunisia and then along the seabed across the Mediterranean into south Italy and later possibly beyond. However, the new technology of which Algeria has become the leading pro-ponent is liquefied natural gas (LNG), a technique which con-tracts the gas volume 600 times for tricity generating system and waste heat utilization. In spite of the volcanic nature of

This liquefaction process entails the country's terrain, efforts to tap geothermal energy were limited un-til recently. In 1975, geothermal chilling the gas to minus 160 Cel-sius. Many forecasts of international energy availability in the coming power generation was limited to five localities, with a total output of decade already accept this technology as a success. However, the li-50,000 kwh. This has now been quefaction process—entailing chill-ing the gas to minus 160 degrees Celsius—has some drawbacks. It is expensive. A Equetaction indoubled with the operation of a geothermal power plant with a capacity of 50,000 kwh at Kakkonda,

in the northern part of the island of stallation easily can top \$1 billion since it must include a liquefaction Honshu. Its operator, the Tohoku "train" to refrigerate the gas, a will be sufficient to meet 70 percent pipeline to bring it (in Algeria's case, several hundred miles to the of household power demand in Morioka, a city with a population LNG terminals at Skikda and Arzew) and special cryogenic tank-The government's target is to ers (mainly built at La Ciotat in France).

Safety is another potential prob-lem. The LNG tankers amount to

floating Thermos jugs: the liquid gas in the special spherical tanks is so intensely cold that a single drop of it which leaked could cause a ship's decks to become brittle and fracture. Although a major accident has never occurred, theoretically the escaping gas would freeze the surrounding sea, then form a lethal gas cloud by evaporation.

Besides cost and safety, Algeria has encountered a special problem in the form of long delays in its original contracts in the United States (the main intended market for Algerian gas) due to time-con-suming government reviews of sales. After successfully passing lengthy hearings by regulatory agencies, an mittal Algerian con-tract was finalized (at a very low price), but others suddenly were confronted with the newly-created U.S. Department of Energy, Now the DOE has announced it can only rule on further Algerian gas imports once it adopts an overall U.S. policy on imported energy

Japan, in contrast, already is relying on natural gas imported from the Middle East, notably LNG from Abu Dhabi. Under a 20-year contract, LNG from the newlycompleted facility on Das Island is supplying the Tokyo Power Co. the world's largest public utility

Expanded Role

The application of new technology is giving gas a newly expanded role of another kind in the Middle East energy picture—as the product used in secondary recovery By reinjecting gas (or seawater in some cases) into oil fields, engineers can boost the declining pressure in the reservoirs and thus ensure that a greater proportion of the oil there is pumped out of the ground

Iran, for instance, hopes in this reserves from 60 billion barrels of oil to 80 billion barrels-4 30 percent expansion in its effective oil reserves in its existing fields.

Secondary recovery by remeetion has become a matter of policy in Saudi Arabia and in the United Arab Emirates.
In all the oil-producing states,

governments have become increasingly sensitive about the future of their oil fields as these resources have been taken over from the multinational oil companies and rocketed in value. The new owners are determined to see their oil is good to the last drop.

Japan Plans for Post-Oil Era With Sunshine Project

oportion of which a By Robert Y. Horiguchi

Djects

involving the Convergence of the Ministry of International Trade the Convergence of Industry promptly called for a te to mean program for national survival in the es of induspost-petroleum age. They named it es of induc-ost-petroleum age. They named it ter desalua he Sunshine Project.

system of a As the name indicates, its princiengles. The objective is harnessing solar recently mower. The project also provides program (c) or the development of goothermal program (c) or the development of goothermal conditions of the development of goothermal conditions of the development of goothermal conditions of the conditions and here. It is belownergy, research into coal liquefacicreases in ion and gasification processes, hyecially the frequency generation by electrolysis

in the processes in temperatures at various iers to do rea levels. The ultimate objective is he development of nuclear fusion

expected the development of the next century, actually by in the outset of the next century, actually by in the wake of the near panic on sumples hat followed the oil crisis, the it is hoped sumshine Project was quickly apalmost all broved by the Diet and funded.

MITT's target price for such a soliters of hydrogen a day. The device ist for the ministry has so far commis-

sioned nine private companies in lar system is \$3,700 for a house has a maximum capacity the fields of construction and do-with 99 square meters of floor liters of hydrogen per day.

Mestic electric appliances to development to develop the development to development to development to development to development to develop the development to developme

oped at a price within reach of the compared with 68 cents to \$1.36 of average home owner, MITI esti-

Cloudy

Solar cooling and heating systems costing \$11,000, which generate 1 kilowatt hour per square meter of solar panels on a clear day, are available. However, because of the number of cloudy and rainy days here, the average generating capacity is 0.16. At that price, a solar system costs two-to-threea solar system costs two-to-threetimes as much as an oil-fueled cen-

op solar housing systems for air conditioning and heating homes.

Another development is in solar batteries. These cost from \$90 to If a suitable system can be devel- \$136 to generate one watt of power, average home owner, MITI estimates that when a million homes come to use a solar appliance, it will result in an annual saving of 279 million barrels of oil.

same amount of power in a nuclear plant. MITI would like to see this solar battery cost cut to one-tenth of its present price by the year 2000.

posing it to the sun's rays. The pro-cess uses semi-conductors of

A wave-operated electric power enerating plant is scheduled to un-

has a maximum capacity of seven

dergo tests this July. It consists of an 80-meter-long, 500-ton barge-like vessel carrying three generators that are activated by turbines run by compressed air created from wave movements. By 1979, this device is expected to be able to produce 1,000 to 2,000 kilowatts per Mirrors

A pilot solar energy power plant with a capacity of 1,000 kwh, devel-oped by the Mitsubishi Co., is also undergoing tests. It consists of 792 reflecting mirrors that direct solar heat to a collecting device atop a tower where it is converted into steam which operates a turbine generator.

Among the more ambitious projects under study, based on a hightemperature gas-cooled reacto MITT's target price for such a so-liters of hydrogen a day. The device an atomic-powered steel mill. Re-

by the Agency of Industrial Science and Technology in association with the Japan Energy Research Institute and 15 major corporations.

This project for a direct steel-

search on this is being carried out

making process using high-temperature reducing gas is expected to reach its initial planning stage in 1980. It calls for the production of reducing gas from asphalt using a 50,000-kilowatt, high-temperature gas-cooled reactor with a thermal changer capable of handling 1.000 degrees Celsuis A pilot low-calorie coal-gasifica-

tion plant for generating electric power has been put into operation using five tons of coal a day, while a 7,000-cubic-meter high-calorie coal-gasification plant is now on the planning boards. Plans are also being drawn up for the construction of a gas-li-

quefaction plant with a capacity of one ton a day.

A parallel project, dubbed the Moonlight Program, has also been generate 1 million kwh from geothermal energy by 1985 and 3 million kwh by 1990.

systems and components for the generation of power in steam, Diesel, gas turbine or nuclear power stations, including cogeneration plant.

Profit from our know how!



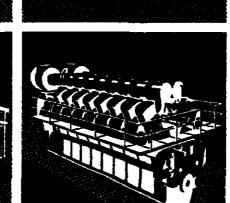
Full Speed Ahead Into The Future

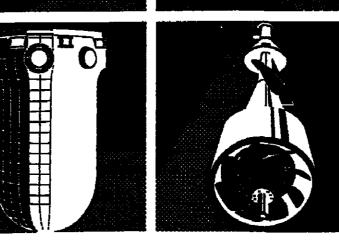
new day begins at BMW motor-cycle plant 1 Berlin's district of Spandau. The 1500 mployees know that their jobs are secure ecause Bavarian Motor-Works is investing over 00 million DM within the next few years and nereby creating more than 1000 new jobs. Then this investment is complete, 260 of the orld-famous BMW motor-cycles will be built aily in Berlin. Today these quality motor-cycles re shipped from Berlin to over 100 countries, icluding, for example, the United States,
ngland – the London Police Department – and
the Sultanate of Oman. BMW is only one of ome 3000 manufacturing companies in Berlin.
erlin's industrial capabilities are not measured
nly by the reputation and world-renowned

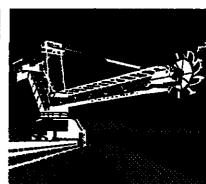
industrial names as Siemens, AEG Telefunken, Schering, Zeiss Ikon, Borsig or Daimler-Benz. In Berlin, Germany's largest industrial city. middle-sized companies recently established operate just as successfully as important international firms. For information about investment incentive programmes and additional possibili-ties in Berlin, contact: Der Senatorfuer Wirtschaft, Martin-Luther-Strasse 105, D-1000 Berlin 62, Telephone: (030) 783 81 57, Telex: 01-83 798.

invest produce in Berlin



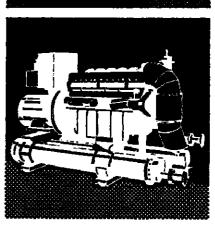


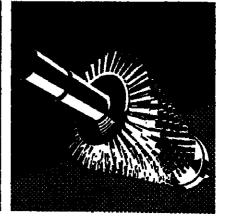




Please mail to M.A.N. Dept. GMW P.O. Box D-8900 Augsburg, WEST GERMANY

Coupon for free brochure "System components for power generation





"Lufthansa can certainly be proud of their staff."

This is an authentic passenger statement.





